IOWA LEAD & ASBESTOS SAFETY

LEAD INSPECTOR REFRESHER

TRAINING COURSE

JAMIE PAPIAN

Instructor

20+ Years Construction Trade Experience
IDPH Certified Lead Inspector
IDPH Certified Lead Abatement Contractor
EPA/AHERA Asbestos Inspector
HUD HQS Inspector

IOWA LEAD & ASBESTOS SAFETY

1

COURSE OVERVIEW

1. **Iowa definitions.**
2. **Iowa certification regulations.**
3. **Radiation safety.**
4. **Hazard assessment protocols.**
5. **Abatement.**
6. **Clearance testing after abatement.**
7. **Reevaluation.**

IOWA LEAD & ASBESTOS SAFETY

2

IOWA DEFINITIONS

1. **Lead Inspection**
2. **Risk assessment**
3. **Lead Free Inspection**
4. **Lead hazard screen**
5. **EBL inspection**
6. **Re-Evaluation**

IOWA LEAD & ASBESTOS SAFETY

3

DEFINITION OF LEAD INSPECTION

"Lead inspection" means a surface-by-surface investigation to determine the presence of lead-based paint and a determination of the existence, nature, severity, and location of lead-based paint hazards, in residential dwelling or child occupied facility and the provision of a written report explaining the results of the investigation and options for reducing lead-based paint hazards to the property owner and to the person requesting the lead inspection.

A certified lead inspector/risk assessor or certified EBL inspector shall not determine that a residential dwelling is free of lead-based paint as a result of a lead inspection.

IOWA LEAD & ASBESTOS SAFETY

4

LEAD FREE INSPECTION

"Lead-free inspection" means an inspection to determine whether a single family dwelling unit or multi family housing is free of lead-based paint and qualifies for the exemption in 24 CFR part 35 and 40 CFR part 745 for target housing being leased that is free of lead-based paint and the provision of a written report explaining the results of the lead-free inspection and options for reducing the lead-based paint hazards to the property owner and to the person requesting the inspection.

IOWA LEAD & ASBESTOS SAFETY

5

DEFINITION OF RISK ASSESSMENT

"Risk assessment" means an investigation to determine the existence, nature, severity, and location of lead-based paint hazards, in a residential dwelling or child-occupied facility and the provision of a written report explaining the results of the investigation and options for reducing lead-based paint hazards to the property owner and to the person requesting the risk assessment.

IOWA LEAD & ASBESTOS SAFETY

6

LEAD HAZARD SCREEN

"Lead hazard screen" means a limited risk assessment activity that involves limited paint and dust sampling and the provisions of a written report explaining the results of the lead hazard screen to the property owner and to the person requesting the lead hazards screen.

IOWA LEAD & ASBESTOS SAFETY

7

ELEVATED BLOOD LEAD (EBL) INSPECTION

"Elevated blood lead (EBL) inspection" means an inspection to determine the sources of lead exposure for an EBL child and the provision within ten working days of a written report explaining the results of the investigation to the owner and occupant of the residential dwelling or child-occupied facility being inspected and to the parents of the EBL child.

A certified EBL inspector/risk assessor shall not determine that a residential dwelling is free of lead-based paint as a result of an EBL inspection.

IOWA LEAD & ASBESTOS SAFETY

8

DEFINITION OF RE-EVALUATION

"Re-Evaluation" means a visual assessment of painted surfaces and limited dust and soil sampling conducted periodically following lead-based paint hazard reduction where lead-based paint is still present and the provision of a written report explaining the results of the re-evaluation.

IOWA LEAD & ASBESTOS SAFETY

9

CERTIFICATION OF LEAD INSPECTORS AND LEAD ABATEMENT CONTRACTORS

- Title X required EPA to develop regulations to require certification of lead inspectors and lead abatement contractors.
- Final EPA regulations published on August 29, 1996. States had until August 1998 to have programs authorized by EPA.
- EPA is operating the program in states that are not authorized.
- Currently about 30 states have authorized programs.
- Lead professionals had to be certified by March 1, 2000.
- EPA will certify individuals only in states where there is NOT an EPA-authorized program.
- EPA will NOT certify individuals in Iowa.

IOWA LEAD & ASBESTOS SAFETY

10

IOWA CERTIFICATION REQUIREMENTS

1. Inspector/ risk assessors, lead abatement contractors, lead abatement workers, sampling technicians, and lead safe renovators must be certified.
2. Firms must be certified and sign statement that they will use only certified workers.
3. For individuals to be certified, must complete an approved training program, pass course test, and pass third-party exam (only inspector/risk assessors and contractors).
4. Must meet education and experience requirements.
5. Must pay a yearly fee and take a refresher course every three years.
6. Inspections, risk assessment, abatement, etc. MUST be conducted according to regulations.
7. A person may be certified as both an inspector and a contractor, but must inform customers of the potential conflict of interest.
8. Owner- occupants do not have to be certified to do repairs even if an EBL child lives there.

IOWA LEAD & ASBESTOS SAFETY

11

COMPLIANCE WITH REGULATIONS

- Course provides very limited overview of regulations.
- Iowa Administrative Code 641Chapter 70- Lead Based Paint activities
- Individuals are responsible for knowing and complying with all details of regulations.

IOWA LEAD & ASBESTOS SAFETY

12

RADIATION SAFETY

IOWA LEAD & ASBESTOS SAFETY

13

SPECIFIC LICENSE VERSUS GENERAL LICENSE

- If your XRF is a Niton, Heuresis or RMD it is probably a generally-licensed machine.
- If you have any other type of machine, Iowa Law may require a specific license.

IOWA LEAD & ASBESTOS SAFETY

14

IOWA RULES FOR GENERAL LICENSE

Applicable regulation: IAC 641--39.4(22)"d"1

1. Ensure that original labels are in the machine.
2. The machine must have a leak test and a test of the on-off mechanism every 6 months. (Must do these every 6 months even if the source was not replaced.)
3. Must keep all of these records for three years.
4. Transportation papers and copy of a current leak test must be in the XRF case.
5. XRF must be stored securely.

IOWA LEAD & ASBESTOS SAFETY

15

IOWA RULES FOR GENERAL LICENSE

6. In a vehicle, keep the XRF as far from the passenger as possible. It must be blocked and braced to keep it from moving during normal transportation.
7. Shall register device with the IDPH Bureau of Radiological Health.
8. Must appoint a responsible individual to ensure that IDPH rules are followed.
9. Shall notify IDPH within 30 days if the device is transferred.
10. Shall comply with the provisions of 641-40.95 and 641-40.96 to report lost or stolen machines and "incidents."

IOWA LEAD & ASBESTOS SAFETY

16

IOWA RULES FOR SPECIFIC LICENSE

- Rules for a specific license are much more extensive than for a general license and are generally beyond the scope of this course.
- Licensee needs to be very familiar with Iowa Administrative Code 641—Chapters 38, 39, and 40.

IOWA LEAD & ASBESTOS SAFETY

17

Methods to Minimize Exposure to Radiation

- Time
- Distance
- Shielding
- Quantity

Protect yourself by keeping exposure "ALARA" ~
As Low As Reasonably Achievable

IOWA LEAD & ASBESTOS SAFETY

18

STORAGE

- Devices should be stored to prevent unauthorized access or removal
- Consider a locked, inaccessible office or closet with power outlet for charging.
- Each area or room in which radioactive material is used or stored should be posted with a "CAUTION - RADIOACTIVE MATERIALS" sign if the quantities exceed:

  .01 millicurie of Cadmium-109
  1 millicurie of Cobalt-57

Unless the radiation levels at 30 centimeters from the container is less than 0.005 rem per hour

IOWA LEAD & ASBESTOS SAFETY

19

IOWA LEAD & ASBESTOS SAFETY

20

MAINTENANCE

Maintenance should be only performed by persons specifically licensed to service the device.

IOWA LEAD & ASBESTOS SAFETY

21

DISPOSAL

Devices contain radioactive material that cannot be disposed of by normal means. They should be returned to the manufacturer for disposal.

IOWA LEAD & ASBESTOS SAFETY

22

Transportation Requirements

- Radiation levels on the exterior of the package must be less than 0.5 millirem per hour (mr/hr)
- 49 CFR 173.423 requires that the shipping papers be in or on the instrument case
- Transport the device as far away from driver and passengers as possible
- The device must be blocked and braced so that it does not move during normal transportation.

IOWA LEAD & ASBESTOS SAFETY

23

Company Name

United States Department of Transportation and
International Atomic Energy Agency
Shipper's Certification
Limited Quantity Radioactive Material

XRF Model:

This package conforms to the conditions and limitations specified in 49 CFR 173.423 for excepted radioactive material, instruments and articles, UN-2911. The limited quantity radioactive material is:

Material Name Quantity

The radiation level at any point on the external surface of this package does not exceed 0.5 millirem per hour. A copy of the current leak test is attached.

No other labels are required or authorized.

This is to certify that the contents of this consignment are properly described by name and are packaged, marked, and labeled are in proper condition for transportation according to all applicable regulations of the Department of Transportation (DOT) and the International Atomic Energy Agency. This consignment is within the limitations prescribed for passenger aircraft.

For further information or in case of an emergency contact
Company
Address
City, State, and ZIP CODE
24-hour Phone Number

This compliance statement should accompany this package at all times.

Company
Address
City, State, and ZIP CODE
Phone Number

IOWA LEAD & ASBESTOS SAFETY

24

Leak Tests

- Required at intervals not to exceed six months – even if the machine is not being used or the source is depleted.
- Analyzed by a licensed company
- Kit and instructions normally provided by company doing the analysis
- Necessary to ensure that the source capsule is not leaking

IOWA LEAD & ASBESTOS SAFETY

25

Test of On-Off Mechanism

- Required at intervals not to exceed six months – even if the machine is not being used or the source is depleted.
- Must document in writing that shutter will not open when the machine is turned off.

IOWA LEAD & ASBESTOS SAFETY

26

EMERGENCY PROCEDURES

If the device is dropped or physical damage is suspected, using a mirror, check to see if the shutter is closed.

If the shutter appears to be open:

- Approach the instrument from the opposite side
- Turn the instrument so that the source is pointed downward

If the device is shattered:

- Isolate the area (a 15 foot radius circle around the source)
- Contact the local HAZMAT for assistance
- Notify the Radiation Safety Officer
- Contact the manufacturer
- Contact NRC or Agreement State radiation control office

IOWA LEAD & ASBESTOS SAFETY

27

EMERGENCY CONTACTS IN IOWA

During normal office hours:	IDPH Bureau of Radiological Health 515-281-3478
After hours, holidays and weekends:	Emergency Management* 515-281-3561 or 515-281-3231

*After contact is made, ask to activate the Radiation Control "On-Call" person. Be prepared to provide call back information so that the Radiation Control "On-Call" person can contact you. They will need the following information from you:

- Incident/ accident location
- Type of incident/accident
- Location description
- Isotope(s) involved
- Any injuries
- Action taken to address injuries and personnel/public on-site

IOWA LEAD & ASBESTOS SAFETY

28

LEAD-BASED PAINT HAZARD ASSESSMENT PROTOCOLS

IOWA LEAD & ASBESTOS SAFETY

29

HAZARD ASSESSMENT PROTOCOLS

1. Lead Free Inspections.
2. Lead Inspections
3. Risk assessments.
4. Lead hazard screens.
5. Re-evaluations

IOWA LEAD & ASBESTOS SAFETY

30

XRF PERFORMANCE CHARACTERISTICS SHEET (PCS)

PCS provides information necessary to conduct an inspection for lead-based paint using a specific XRF instrument.

PCS contains the information regarding:

1. **XRF instrument reading time.**
2. **Calibration check tolerance.**
3. **Number of readings needed on each testing combination.**
4. **The need for substrate correction.**
5. **Inconclusive ranges.**
6. **How to resolve inconclusive XRF readings.**
7. **How to evaluate the quality of XRF testing.**

HUD and EPA recommend using an XRF only it there is a PCS for it.

IOWA LEAD & ASBESTOS SAFETY

31

LEAD INSPECTIONS VS. LEAD FREE INSPECTIONS

Choosing a protocol: What do you want to be able to say in the final report?

Do you want to opt out of the real estate disclosure rule?	**?**	**Is the purpose of the inspection to establish that lead-based paint is present (as in an EBL investigation)?**
Do you want to say that property is free of lead-based paint?	**?**	**You want an inspection to find lead-based paint, but don't need to completely rule out the presence of lead-based paint.**
Use the protocol to establish that there is no lead-based paint present.	**?**	**Use the protocol that establishes that lead-based paint is present.**

IOWA LEAD & ASBESTOS SAFETY

32

LEAD FREE INSPECTIONS

IOWA LEAD & ASBESTOS SAFETY

33

DISTINCTINON BETWEEN SINGLE-FAMILY AND MULTI-FAMILY

- Single-family: All units must be tested.
- Multi-family: Specified number of randomly-selected units are tested.

IOWA LEAD & ASBESTOS SAFETY

34

PAINTED COMPONENTS THAT SHOULD BE TESTED

All interior and exterior painted components must be tested.

IOWA LEAD & ASBESTOS SAFETY

35

DEFINITIONS

CALIBRATION CHECK - procedure used to verify that the XRF is working properly.

SUBSTRATE CORRECTION - procedure used to correct for positive or negative interference of the substrate with the XRF readings.

INCONCLUSIVE READINGS - readings where EPA testing has determined that the XRF reading may not be accurate.

IOWA LEAD & ASBESTOS SAFETY

36

DEFINITIONS

ROOM EQUIVALENT is an identifiable part of a residence such as a room, an exterior side, or an exterior area.

- **Hallways, stairways, porches, backyards, and each side of the house are all separate room equivalents.**
- **Closets and other adjoining areas are room equivalents if large or dissimilar (ex., different colors).**
- **Each room equivalent must be tested.**

IOWA LEAD & ASBESTOS SAFETY

37

DEFINITIONS

COMPONENTS are separate parts of the room equivalent, such as the ceiling, floor, walls, door and casing, window sash, window casing, window well or stool. cabinets, etc.

SUBSTRATE is the material underneath the paint.

- **The substrate should be classified as one of the following six types: brick, concrete, drywall, metal, plaster, or wood.**

IOWA LEAD & ASBESTOS SAFETY

38

COMPONENTS THAT DO NOT NEED TO BE TESTED

Components KNOWN to have been replaced after 1977 do NOT need to be tested.

- **Detailed specifications for the job AND evidence the work was actually completed (receipts, city building records, etc.).**
- **Certification under penalty of perjury per Iowa Code 622.1 from the contractor or owner.**

IOWA LEAD & ASBESTOS SAFETY

39

DEFINITIONS

TESTING COMBINATION is a unique combination of:

1. **Room equivalent**
2. **Component**
3. **Substrate**

IOWA LEAD & ASBESTOS SAFETY

40

EXAMPLES OF TESTING COMBINATIONS

ROOM EQUIVALENT	COMPONENT	SUBSTRATE
Bedroom	Door	Wood
Kitchen	Wall	Plaster
Garage	Floor	Concrete
West side of house	Siding	Wood
Exterior area playground	Swing set	Metal
Exterior area playground	Swing set	Metal

IOWA LEAD & ASBESTOS SAFETY

41

BUILDING COMPONENTS THAT CAN BE GROUPED TOGETHER

1. **Window casings, stops, jambs, and aprons.**
2. **Interior window mullions and window sashes.**
3. **Exterior window mullions and window sashes.**
4. **Door jambs, stops, transoms, casings, and other door frame parts.**
5. **Door stiles, rails, panels, mullions, and other door parts.**
6. **Baseboards and associated trim (does not include chair rails, crown molding, and walls.)**
7. **Group painted electrical sockets, switches, and plates with walls.**

IOWA LEAD & ASBESTOS SAFETY

42

WINDOWS

If applicable windows should have at least four testing combinations:

1. Interior sill
2. Trough
3. Sash
4. Frame

DOORS

Each side of a painted door is considered a component within the respective room.

IOWA LEAD & ASBESTOS SAFETY

43

TEST LOCATION: SINGLE-FAMILY HOUSING

1. Area chosen to take an XRF reading.
2. All components except walls: one reading per test combination.
3. Walls: Take at least four readings on interior walls.

IOWA LEAD & ASBESTOS SAFETY

44

RULES FOR MORE THAN FOUR INTERIOR WALLS:

- Among first four walls, if some are positive and some are negative, test ALL remaining walls and classify individually.
- If remaining walls do not have the same painting history as first four walls, test all walls and classify individually.
- If first four walls had same classification and appear to have same painting history as remaining walls, average the first four readings and classify ALL walls based on rounded average.

IOWA LEAD & ASBESTOS SAFETY

45

SELECTING A SPECIFIC TEST LOCATION

1. Choose locations where paint is the thickest.
2. Do NOT choose locations where paint is worn away or scraped off.
3. Avoid areas of possible interference: over pipes, electrical wires, nails, etc.

IOWA LEAD & ASBESTOS SAFETY

46

XRF CALIBRATION CHECK

If your XRF does not meet the calibration check limits at any time, you must follow the manufacture's instructions for bringing it into calibration.

Any readings taken since the last calibration check are not valid and must be redone.

IOWA LEAD & ASBESTOS SAFETY

47

COLLECTING PAINT SAMPLES TO RESOLVE INCONCLUSIVE RESULTS

- Collect paint chip samples as previously instructed.
- When results come back, if possible, convert to mg/cm^2 and classify as positive or negative.
- If results cannot be converted to mg/cm^2,then classify as positive if greater than 0.5% by weight.

IOWA LEAD & ASBESTOS SAFETY

48

WHAT IF OWNER DOES NOT WANT INSPECTOR TO TAKE PAINT CHIP SAMPLES?

- Must assume that all inconclusive readings are positive. Report should state this assumption and list all testing combinations to which this applies.
- Inspector may NOT assume that inconclusive readings are negative.

IOWA LEAD & ASBESTOS SAFETY

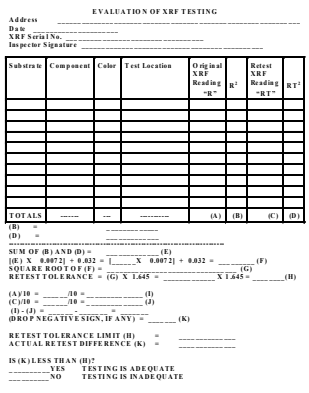
49

REPEAT TESTING OF 10 SURFACES for LEAD FREE Inspections
Required Documentation

- Must select 10 random testing combinations for re-testing.
- Compare the original reading to the new reading, without doing substrate correction.
- The average of the 10 repeat results should not differ from the 10 original results by more than the retest tolerance limit (need PCS to calculate the retest tolerance limit). If they exceed this limit perform the procedure again using different testing combinations If still not with in tolerance limits then the XRF results are not reliable.

IOWA LEAD & ASBESTOS SAFETY

50



EVALUATION OF XRF TESTING

Address _____
Date _____
XRF Serial No. _____
Inspector Signature _____

Substrate	Component	Color	Test Location	Original XRF Reading "R"	R^2	Retest XRF Reading "RT"	RT^2
TOTALS	------	---	----------	(A)	(B)	(C)	(D)

(B) = _____
(D) = _____

SUM OF (B) AND (D) = _____ (E)
[(E) X 0.0072] + 0.032 = [_____X 0.0072] + 0.032 = _____ (F)
SQUARE ROOT OF (F) = _____ (G)
RETEST TOLERANCE = (G) X 1.645 = _____ X 1.645 = _____(H)

(A)/10 = _____/10 = _____ (I)
(C)/10 = _____/10 = _____ (J)
(I) - (J) = _____ = _____
(DROP NEGATIVE SIGN, IF ANY) = _____ (K)

RETEST TOLERANCE LIMIT (H) = _____
ACTUAL RETEST DIFFERENCE (K) = _____

IS (K) LESS THAN (H)?
_____YES TESTING IS ADEQUATE
_____NO TESTING IS INADEQUATE

IOWA LEAD & ASBESTOS SAFETY

51

EVALUATION OF XRF TESTING

Address _____
Date _____
XRF Serial No. _____
Inspector Signature _____

Substrate	Component	Color	Test Location	Original XRF Reading "R"	R^2	Retest XRF Reading "R1"	$R1^2$
				2.0	4.0	2.5	6.25
				2.2	4.84	1.7	2.89
				3.0	9.0	2.8	7.84
				1.5	2.25	1.0	1.0
				2.8	7.84	3.0	9.0
				3.2	10.24	2.8	7.84
				1.1	1.21	1.4	1.96
				2.1	4.41	1.9	3.61
				1.8	3.24	2.0	4.0
				2.3	5.29	2.5	6.25
TOTALS	------	--	------	22.0 (A)	52.32	21.6 (C)	50.64

(B) = 52.32
(D) = 50.64

SUM OF (B) AND (D) = 102.96 (E)
[(E) X 0.0072] + 0.032 = [102.96 X 0.0072] + 0.032 = 0.773 (F)
SQUARE ROOT OF (F) = 0.879 (G)
RETEST TOLERANCE = (G) X 1.645 = 0.879 X 1.645 = 1.446 (H)

(A)/10 = 22.0 /10 = 2.20 (I)
(C)/10 = 21.6 /10 = 2.16 (J)
(I) – (J) = 2.20 - 2.16 = 0.04
(DROP NEGATIVE SIGN, IF ANY) = 0.04 (K)

RETEST TOLERANCE LIMIT (H) = 1.446
ACTUAL RETEST DIFFERENCE (K) = 0.04

IS (K) LESS THAN (H)?
__X__ YES TESTING IS ADEQUATE
_____NO TESTING IS INADEQUATE

IOWA LEAD & ASBESTOS SAFETY

52

WHAT ABOUT NEGATIVE XRF READINGS?

1. Random error in XRF measurements can cause original values or values corrected for substrate bias to be negative numbers.
2. If more than 20% of corrected values are negative, XRF paint readings or substrate readings are probably in error.
3. Check calibration and repeat substrate measurements.

IOWA LEAD & ASBESTOS SAFETY

53

DOCUMENTATION IN SINGLE-FAMILY HOUSING

There are two possible methods of data documentation:

1. Record all data on handwritten forms and supplement with a typed summary. Since there can be transcription errors, be sure to examine all handwritten data carefully for missing data and copying errors.
2. Data can be collected and stored electronically. This is recommended only if enough data can be recorded so that another person can find the test location for each XRF reading. Examine a hard copy of electronic data at least once a day to look for missing information. In addition, a daily back-up of the data is recommended.

IOWA LEAD & ASBESTOS SAFETY

54

FINAL INSPECTION REPORT

1. Complete set of information about the site.
2. Summary of information.
3. Due 3 weeks after the inspection

IOWA LEAD & ASBESTOS SAFETY

55

COMPLETE SET OF INFORMATION ABOUT THE SITE

1. Complete data set.
2. Housing unit identifiers.
3. Date of inspection.
4. Name of inspector and firm and relevant licenses/certifications.
5. System used to number/identify building components and room equivalents. A sketch is recommended.

IOWA LEAD & ASBESTOS SAFETY

56

COMPLETE SET OF INFORMATION ABOUT THE SITE

6. ALL XRF readings (including calibration, substrate correction, etc.)
7. All paint chip analyses.
8. Testing protocol used (i.e. from chap. 70.6(1) IAC)
9. Instrument manufacturer, model , serial number, mode(s) of operation, software version (if applicable) and age of radioactive source.
10. Information regarding the owners' legal obligation to disclose inspection results to tenants and/or prospective buyers.

IOWA LEAD & ASBESTOS SAFETY

57

COMPLETE SET OF INFORMATION ABOUT THE SITE

11. Final classification of all testing combinations as positive or negative. Must include a list of all combinations, building types, and substrates that were classified based on results of testing other combinations.

    Example:

    Interior window sill of one window tested positive.
    Report must state that all three window sills in the room are all assumed to be positive.

IOWA LEAD & ASBESTOS SAFETY

58

SUMMARY REPORT

1. Name and address of the inspector and any appropriate license or certification number.
2. Address of home where inspection was performed.
3. Dates that the inspection was performed, including beginning and ending times for each day.
4. Name, address, and telephone numbers of the owner.
5. Statement that testing was conducted according to the procedures in 641-Chapter 70 of the Iowa Administrative Code.
6. If conducted by XRF, include the model and serial number of the XRF.

IOWA LEAD & ASBESTOS SAFETY

59

SUMMARY REPORT

7. Is lead-based paint present in the home? Include the actual definition of lead-based paint.
8. If lead-based paint is present, where is it located? What level of lead is found in the lead-based paint?
9. If lead-based paint is found, include some instructions regarding what the owner should do to check the condition of the paint and maintain it in good condition.
10. If lead-based paint hazards are found, include interim control options and or abatements options for each identified lead-based paint hazard.

IOWA LEAD & ASBESTOS SAFETY

60

SUMMARY REPORT

11. If lead-based paint was NOT found, the summary must include exact language from Chapter 70.
12. Language regarding disclosure, and Iowa's prerenovation notification requirements.

IOWA LEAD & ASBESTOS SAFETY

61

INSPECTION TO DETERMINE IF HOUSING IS FREE OF LEAD-BASED PAINT

MULTI-FAMILY HOUSING

1. Select housing units to be tested.
2. Inventory painted surfaces and select those to be tested.
3. Determine instrument reading time.
4. Conduct the XRF calibration check.

IOWA LEAD & ASBESTOS SAFETY

62

INSPECTION TO DETERMINE IF HOUSING IS FREE OF LEAD-BASED PAINT MULTI-FAMILY HOUSING

1. Select housing units to be tested.
2. Inventory painted surfaces and select those to be tested.
3. Determine instrument reading time.
4. Conduct the XRF calibration check.
5. Determine the number of readings to take on each testing combination.
6. Take and record the XRF readings and calculate the XRF results.
7. Evaluation of inspection by inspector.
8. Document data.

IOWA LEAD & ASBESTOS SAFETY

63

SELECT UNITS TO BE TESTED IN MULTI-FAMILY HOUSING

4. **Randomly select units until you have selected the number of units required for testing.**
5. **Count the number of common areas (lobby, laundry room, hallway, etc.). Apply Table I to determine how many to test.**
6. **Count the number of exterior room equivalents. Apply Table I to determine how many to test.**

IOWA LEAD & ASBESTOS SAFETY

64

Table I

Minimum Number of Residential Dwellings to be Randomly Selected in Multifamily Housing for Lead–Free Inspection, Risk Assessment, Lead Hazard Screen, or Clearance Testing

Number of Similar Residential Dwellings, Similar Common Areas, or Similar Exteriors in Multifamily Housing	Lead–Free Inspection, Risk Assessment, or Lead Hazard Screen		Clearance Testing Number of Residential Dwellings to Randomly Select for Clearance Testing
	Number of Pre–1960 Residential Dwellings or Residential Dwellings of Unknown Date of Construction to Randomly Select for Testing	Number of 1960–1977 Residential Dwellings to Randomly Select for Testing	
1–9	All	All	All
10–13	All	10	All
14	All	11	All
15	All	12	All
16–17	All	13	All
18	All	14	All
19	All	15	All
20	All	16	All
21–26	20	16	20
27	21	17	21
28	22	18	22
29	23	18	23

IOWA LEAD & ASBESTOS SAFETY

65

28	22	18	22
29	23	18	23
30	23	19	23
31	24	19	24
32	25	19	25
33–34	26	19	26
35	27	19	27
36	28	19	28
37	29	19	29
38–39	30	20	30
40–48	31	21	31
49–50	31	22	31
51	32	22	32
52–53	33	22	33
54	34	22	34
55–56	35	22	35
57–58	36	22	36
59	37	23	37
60–69	38	23	38
70–73	38	24	38
74–75	39	24	39
76–77	40	24	40
78–79	41	24	41
80–88	42	24	42
89–95	42	25	42

IOWA LEAD & ASBESTOS SAFETY

66

96–97	43	25	43
98–99	44	25	44
100–109	45	25	45
110–117	45	26	45
118–119	46	26	46
120–138	47	26	47
139–157	48	26	48
158–159	49	26	49
160–177	49	27	49
178–197	50	27	50
198–218	51	27	51
219–258	52	27	52
259–279	53	27	53
280–299	53	28	53
300–379	54	28	54
380–499	55	28	55
500–776	56	28	56
777–939	57	28	57
940–1004	57	29	57
1005–1022	58	29	58
1023–1032	59	29	59
1033–1039	59	30	59
1040+	5.8%, rounded to the next highest whole number	2.9%, rounded to the next highest whole number	5.8%, rounded to the next highest whole number

IOWA LEAD & ASBESTOS SAFETY

67

SELECTION OF UNITS

Page ____ of ____

Testing Site_________________________________Date__________

Total Number of Units	Random Number*	Total Number of Units X Random Number	Round Up for Unit Number to Sample	Actual Unit to be Sampled	Sample Number

IOWA LEAD & ASBESTOS SAFETY

68

SELECTION OF UNITS

Page ____ of ____

Testing Site___Lawnwood Apartments_____________Date__________

Total Number of Units	Random Number*	Total Number of Units X Random Number	Round Up for Unit Number to Sample	Actual Unit to be Sampled	Sample Number
76	0.656	49.856	50	10-A	1
76	0.101	7.676	8	1-H	2
76	0.330	25.08	26	3-B	3
76	0.603	45.828	46	5-	4
76	0.880	66.88	67	9-C	5
76	0.257	19.532	20	3-D	6

IOWA LEAD & ASBESTOS SAFETY

69

STATISTICAL CONFIDENCE IN DWELLING UNIT SAMPLING

If lead levels in ALL units, common areas, or exteriors tested are less than 1.0 mg/cm^2, these sample sizes provide 95% confidence that:

1. **In pre-1960 housing, less than 5% of the units or fewer than 50 units in the complex (whichever is less) have lead at or above 1.0 mg/cm^2.**
2. **In 1960-1977 housing, less than 10% of the units or fewer than 50 units in the complex (whichever is less) have lead at or above 1.0 mg/cm^2.**

IOWA LEAD & ASBESTOS SAFETY

70

INVENTORY AND SELECTION OF PAINTED SURFACES

MULTI-FAMILY HOUSING

Testing combinations are defined in the same way for multi-family housing as for single-family housing.

IOWA LEAD & ASBESTOS SAFETY

71

NUMBER OF READINGS ON EACH TESTING COMBINATION

1. **Take and record one XRF reading on each testing combination. Except walls which all need tested.**
2. **Try to vary the location of the readings from unit to unit. For example, test the top middle of the west wall in one unit, the bottom left of the east wall in a second unit, and the middle right of the south wall in a third unit.**

IOWA LEAD & ASBESTOS SAFETY

72

XRF CALIBRATION CHECK READINGS FOR MULTI-FAMILY HOUSING

Use the same procedure as in single family housing.

IOWA LEAD & ASBESTOS SAFETY

73

NO

SUBSTRATE CORRECTION & INCONCLUSIVE READINGS

For multi-family lead-free inspections DO NOT use XRF's or software that need substrate correction or give inconclusive readings.

IOWA LEAD & ASBESTOS SAFETY

74

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

Must classify each reading as positive or negative.

IOWA LEAD & ASBESTOS SAFETY

75

MULTI-FAMILY HOUSING: XRF TESTING DATA SHEET

Page___of___

Address/Unit No._____ Date _____
Room Equivalent_____
XRF Serial No._____ Inspector Signature _____

Sample ID No.	Substrate	Component	Color	Replication No.	Test Location	XRF Reading	Classification

IOWA LEAD & ASBESTOS SAFETY

76

MULTI-FAMILY HOUSING: XRF TESTING DATA SHEET

Page___of___

Address/Unit No._____ Date _____
Room Equivalent_____
XRF Serial No._____ Inspector Signature _____

Sample ID No.	Substrate	Component	Color	Replication No.	Test Location	XRF Reading	Classification
105.1	Wood	Baseboard	White	3	Wall A –left	1.6	Positive
105.2	Wood	Window sill	White	2	Wall C -center	0.1	Negative
105.3	Wood	Window trough	White	2	Wall C -center	0.1	Negative
105.4	Wood	Window trim	White	2	Wall C –right side-center	0.1	Negative
105.5	Wood	Window sash	White	2	Wall C –center	0.0	Negative
105.6	Metal	Door	Brown	1	Wall C –center	0.0	Negative

IOWA LEAD & ASBESTOS SAFETY

77

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

COMPONENT TYPE: A group of like components constructed of the same substrate (paint color is not considered).

- **All walls tested would be one component type IF they are ALL plaster or ALL drywall.**
- **All doors could NOT be a component type IF some are metal and some are wood.**
- **All WOOD doors would be one component type, and all METAL doors would be one component type.**

IOWA LEAD & ASBESTOS SAFETY

78

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

- In order for procedures in this guideline to work, need at least 40 samples of each COMPONENT TYPE.
- If less than 40 of any component, test additional components to get to a total of 40.
- If less than 40 components available to be tested, test all of them.
- Remember 40 samples for an aggregate

IOWA LEAD & ASBESTOS SAFETY

79

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

The COMPONENT TYPE is NEGATIVE if 100% of the component type is NEGATIVE.

The COMPONENT TYPE is POSITIVE if 15% or more of the component type is POSITIVE.

IOWA LEAD & ASBESTOS SAFETY

80

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

If greater than 5%, but less than 15% of the component type is POSITIVE:

1. Assume all of component type is positive, OR
2. Analyze paint samples taken from all POSITIVE readings.
   A. All samples are negative: component is negative.
   B. If one or more are positive: component is positive.

IOWA LEAD & ASBESTOS SAFETY

81

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

If greater than 0%, but less than 5% or more of the component type is POSITIVE, there are three choices:

1. **Assume that lead-based paint is present development-wide.**
2. **Confirm all POSITIVE results by lab analysis.**
   - **A. If all results are negative: component is negative.**
   - **B. If one or more are positive: component is positive.**
3. **Select a second random sample from un-sampled units. If less than 2.5% of the combined set is positive, lead-based paint is present in isolated locations, but not development-wide.**

IOWA LEAD & ASBESTOS SAFETY

82

CLASSIFICATION OF XRF RESULTS IN MULTI-FAMILY HOUSING

NOTE: This procedure does NOT tell WHICH SPECIFIC COMPONENTS have tested positive for lead. It only indicates that ONE OR MORE components contained lead at greater than or equal to 1.0 mg/cm^2.

Additional testing would be needed to determine exactly WHICH components contained lead at greater than or equal to 1.0 mg/cm^2.

IOWA LEAD & ASBESTOS SAFETY

83

MULTI-FAMILY HOUSING: COMPONENT TYPE REPORT

Page _____ of _____

Address/Unit No. _____

Date _____ XRF Type and Serial Number _____

Inspector Signature _____

Component Description	Total No.	POSITIVE No.	POSITIVE %	NEGATIVE No.	NEGATIVE %	Final Class

IOWA LEAD & ASBESTOS SAFETY

84

MULTI-FAMILY HOUSING: COMPONENT TYPE REPORT

Page _____ of _____

Address/Unit No. _____

_____

Date _____ XRF Type and Serial Number _____

Inspector Signature _____

Component Description	Total No.	POSITIVE No.	POSITIVE %	NEGATIVE No.	NEGATIVE %	Classification
Metal doors	89	0	0	89	100	Negative
Wood doors	51	6	11.8	45	88.2	Negative: See Lab results worksheet
Wood baseboards	40	1	2.5	39	97.5	Negative: See Lab results worksheet
Drywall walls	130	0	0	130	100	Negative

IOWA LEAD & ASBESTOS SAFETY

85

MULTI-FAMILY HOUSING: ADDITIONAL LABORATORY TESTING SHEET

Page___ of___

Address/Unit No._____ Date _____

Laboratory Name_____ Laboratory Address_____

Laboratory Phone No._____

Laboratory Certification No._____ Inspector Signature _____

Sample ID No.	Component	Component Location	Original Positive XRF Results in mg/cm^2	Laboratory Results in mg/cm^2	Laboratory Classification
BB-105-1	Wood Baseboard	Apt 105 Living room	1.6	0.8	Negative
D- 222-1	Wood Door	Apt 222 Bedroom A	1.1	0.7	Negative
D- 245- 2	Wood Door	Apt 245 Bedroom A	1.1	0.6	Negative
D- 260- 3	Wood Door	Apt 260 Bedroom C	1.2	0.7	Negative
D- 580- 4	Wood Door	Apt 580 Bedroom A	1.0	0.7	Negative
D- 600- 5	Wood Door	Apt 600 Bedroom C	1.3	0.9	Negative
D- 602- 6	Wood Door	Apt 602 Bedroom B	1.0	0.6	Negative

IOWA LEAD & ASBESTOS SAFETY

86

EVALUATION OF INSPECTION

Same procedure for multi-family housing as for single-family housing except:

The retest tolerance limit must be calculated in 2 randomly selected units.

IOWA LEAD & ASBESTOS SAFETY

87

PAINT CHIP COLLECTION NOTIFICATION REPORT AND REPORT DUE DATE

Are all virtually the same for multi-family housing as for single-family housing except:

Inspector's must also show their work (i.e. how they determined which units to test and how they determined what to classify a component as).

IOWA LEAD & ASBESTOS SAFETY

88

LEAD INSPECTION PROTOCOL

- **Takes far fewer readings to demonstrate that lead is likely to be present than to prove that it is not present.**
- **Assessment/explanation of hazards is an important component of this type of inspection.**
- **Recommend using this approach in pre-1960 property.**

IOWA LEAD & ASBESTOS SAFETY

89

LEAD INSPECTION DEFINITION

"means a surface-by-surface investigation to determine the presence of lead-based paint and determination of the existence, nature, severity, and location of lead-based hazards in a residential dwelling or child-occupied facility and the provision of a written report explaining the results of the investigation and options for reducing lead-based paint hazards to the property owner and to the person requesting the inspection.

A certified lead inspector/risk assessor or certified elevated blood lead (EBL) inspector/risk assessor shall not determine that a residential dwelling is free of lead-based paint as a result of a lead inspection."

IOWA LEAD & ASBESTOS SAFETY

90

LEAD INSPECTION PROTOCOL

Information that May Help a Customer Decide about Knowing the Exact Level of Lead in the Paint

- The level of lead in paint does not change from non-hazardous to hazardous when the XRF reading goes from 0.9 mg/cm^2 to 1.0 mg/cm^2. Rather, it's all relative.
- In most cases of childhood lead poisoning that IDPH investigates, the problems are caused by paint with levels of 3.0 to 4.0 mg/cm^2 or higher--not by paint with lower levels of lead.
- You should NOT rule out the presence of lead-based paint if you perform a lead inspection. However, it may not be important to absolutely rule out the presence of lead-based paint.

IOWA LEAD & ASBESTOS SAFETY

91

LEAD INSPECTION PROTOCOL

1. Inventory painted surfaces and select those to be tested.
2. Determine instrument reading time.
3. Conduct the XRF calibration check (average of 3 readings).
4. Take and record the XRF readings on at least one of every component type in every room equivalent.

IOWA LEAD & ASBESTOS SAFETY

92

LEAD INSPECTION PROTOCOL

5. If required by your XRF, conduct substrate correction* and resolve inconclusive readings*.
6. Hazard assessment.
7. Document data.

*Only necessary to perform substrate correction and resolve in conclusive if components are to be classified as negative. This step can be skipped and everything assumed to be positive.

IOWA LEAD & ASBESTOS SAFETY

93

SOIL SAMPLES ARE NOT USUALLY NECESSARY TO IDENTIFY LEAD HAZARDS IN HOUSING

1. If the exterior of the house has ever been painted with lead-based paint, it should be assumed that the bare soil around the dripline of the house has high levels of lead.
2. Children's play areas that are located away from the house do NOT usually have high levels of lead in the soil. HOWEVER, IDPH general advice is that children should not be allowed to play in bare soil, especially if they are likely to put it into their mouths.

IOWA LEAD & ASBESTOS SAFETY

94

WATER SAMPLES ARE NOT USUALLY NECESSARY TO IDENTIFY LEAD HAZARDS IN HOUSING

Water is virtually never the cause of childhood lead poisoning. Families should follow previously-listed precautions to further reduce their exposure to lead in water.

IOWA LEAD & ASBESTOS SAFETY

95

DUST SAMPLES ARE NOT USUALLY NECESSARY TO IDENTIFY LEAD HAZARDS IN HOUSING

1. The presence of lead-based paint hazards can be used to predict excess levels of lead in dust.
2. If lead-based paint is present on friction or impact surfaces, average dust lead levels may be close to or slightly above the recommended levels. Family should pay special attention to housekeeping.
3. If peeling and chipping paint is present inside OR outside the house, dust levels will likely exceed the recommended levels. The more peeling and chipping paint, and the higher this paint is in lead content, the higher the dust levels will be.

HUD does not allow speculation- They require testing

IOWA LEAD & ASBESTOS SAFETY

96

DUST SAMPLES ARE NOT USUALLY NECESSARY TO IDENTIFY LEAD HAZARDS IN HOUSING

4. If there are obvious accumulations of dust in the corners of a house that has lead-based paint hazards, dust levels are likely to be far above the recommended levels.

5. If the family has been using improper methods to remove lead-based paint and has not done an extremely thorough clean-up, dust levels are likely to be far above the recommended levels.

HUD does not allow speculation. They require testing.

IOWA LEAD & ASBESTOS SAFETY

97

WHAT WILL PROVIDE THE BEST SERVICE FOR THE CLIENT?

1. HUD guidelines recommend only sampling deteriorating paint and then doing dust samples. This means that owner will have exact dust lead levels, but far less than complete information about where lead-based paint is found.

2. For the same price, inspector could take enough XRF readings to determine where lead-based paint is found and use the presence of lead hazards to project dust levels.

IOWA LEAD & ASBESTOS SAFETY

98

LEAD INSPECTION PROTOCOL

Document Results

- Results must include an assessment of lead hazards in addition to the presence of lead-based paint.
- The report should include a standard definition of a lead hazard, information about preventive maintenance, and referral to information about working safely with lead-based paint.

I.A.C. 641-70.6(2)6.d: This code section indicates what must be included in a lead inspection report.

IOWA LEAD & ASBESTOS SAFETY

99

RISK ASSESSMENT

The protocol for risk assessments and lead hazard screens done in Iowa are found in Chapter 70 of the IAC.

However, the example forms mentioned in the slides that follow are found in the Chapter 5 of the HUD Guidelines.

2012 HUD Guidelines are available online

IOWA LEAD & ASBESTOS SAFETY

100

STEPS TO FOLLOW IN CONDUCTING A RISK ASSESSMENT

1. Get background information.
2. Schedule the evaluation.
3. Conduct the evaluation.
4. Determine the actual hazards.
5. Provide guidance towards reducing or eliminating hazards. (May include cost estimates.)
6. Provide a written report.

IOWA LEAD & ASBESTOS SAFETY

101

CONDUCT THE EVALUATION

1. Visual assessment.
2. Dust sampling.
3. Paint sampling.
4. Soil sampling.

IOWA LEAD & ASBESTOS SAFETY

102

HOW MANY UNITS TO EVALUATE IN MULTI-FAMILY HOUSING?

- Evaluate each dwelling unit if:
  - Fewer than five units.
  - Multiple units where units are not similar.
- Evaluate targeted dwellings if:
  - Five units or more.
  - Multiple units are similar.

IOWA LEAD & ASBESTOS SAFETY

103

VISUAL ASSESSMENT OF PAINT AND BUILDING CONDITION

1. What is the overall condition of the building?
2. Deteriorated paint.
3. Conditions causing deteriorated paint.
4. Chewable, impact, and friction surfaces.
5. Visible dust accumulation.
6. Bare soil.

IOWA LEAD & ASBESTOS SAFETY

104

OVERALL CONDITION OF THE BUILDING

- Use Form 5.1 from Chapter 5 of the HUD Guidelines.
- Are these conditions causing paint to deteriorate?
- Poor maintenance may indicate that interim controls are not a good option.

IOWA LEAD & ASBESTOS SAFETY

105

ASSESS CONDITION OF PAINTED SURFACES

- Use Form 5.2 for single-family, owner-occupied home.
- Use Form 5.7 for rental dwellings.

IOWA LEAD & ASBESTOS SAFETY

106

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		
Exterior or interior walls have obvious large cracks or holes, requiring more than routine pointing (if masonry) or painting		
Exterior siding has missing boards or shingles		
Water stains on interior walls or ceilings		
Plaster walls or ceilings deteriorated		
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:

IOWA LEAD & ASBESTOS SAFETY

107

DUST SAMPLING

- Complete dust sampling BEFORE any destructive paint sampling.
- Use data from visual assessment and residents' use patterns to determine exact number and locations for dust sampling.
- Inspector decides whether composite or single-surface sampling is best.
- Use composite sampling when surfaces are similar.
- Use single-surface samples on unique surfaces — e.g., window used as play area.

IOWA LEAD & ASBESTOS SAFETY

108

IF SINGLE-SURFACE DUST SAMPLING IS CHOSEN:

1. Collect six to eight samples per dwelling.
2. Most likely child contact areas are:
   - Entryway (including porches).
   - Child's principal play area.
   - Child's bedroom.
   - Kitchen.
   - Bathroom.
3. Choose the following areas:
   Floors near friction or impact surfaces or surfaces with deteriorated paint.
   Interior window sills near play areas.
   Windows troughs of windows that are opened (esp. near play areas).

IOWA LEAD & ASBESTOS SAFETY

109

IF COMPOSITE DUST SAMPLING IS CHOSEN:

1. Collect at least one sample each from:
   - Uncarpeted floors.
   - Carpeted floors.
   - Interior window sills.
   - Window troughs.
2. Remember that surface area of sample must be similar from room to room.
3. Each dwelling unit must be sampled separately.

IOWA LEAD & ASBESTOS SAFETY

110

COMPOSITE SUBSAMPLE LOCATIONS IN HOMES WITH CHILDREN

- Principal playroom for children.
- Kitchen
- Bedroom of youngest child.
- Bedroom of next oldest child.

IOWA LEAD & ASBESTOS SAFETY

111

EXAMPLE OF A DUST SAMPLING PLAN

LOCATION	SINGLE-SURFACE SAMPLE	COMPOSITE SAMPLE
Floor of child's play area.	1	1
Interior window sill in child's play area.	2	2
Floor of kitchen.	3	1
Window trough of kitchen window.*	4	3
Floor of bedroom for youngest child.	5	1
Interior window sill of bedroom for youngest child.	6	2
Floor of bedroom of next oldest child.	7	1
Window trough of bedroom of next oldest child.*	8	3
Additional dusty areas accessible to child.	9?	4?

*If trough is not accessible, collect interior window sill sample.

IOWA LEAD & ASBESTOS SAFETY

112

DETERIORATED PAINT ANALYSIS

- XRF's can only be used on intact paint — not on peeling paint. However, inspector can usually find enough paint to test with an XRF.
- XRF readings of paint chips over a lead-free standard are NOT recommended.
- If more than five deteriorated paint surfaces should be tested, owner should consider a complete inspection.
- Chewed surfaces should be tested. However, do not do paint chip sampling unless surface is immediately covered with durable material.
- Do destructive paint testing AFTER dust sampling to prevent contamination.

IOWA LEAD & ASBESTOS SAFETY

113

HAZARD LEVELS FOR LEAD-BASED PAINT RISK ASSESSMENTS

MEDIA	LEVEL
Deteriorated paint (single surface).	Greater than or equal to 1 mg/cm^2 OR Greater than 0.5% by weight.
Deteriorated paint (composite sample)	0.5% by weight or 1 mg/cm^2 Number of subsamples
Dust (wipe sampling only) Includes single surface and composite	
Carpeted floors*	≥ 40 µg/ft^2
Hard floors	≥ 40 µg/ft^2
Interior window sills	≥250 µg/ft^2
Window troughs	≥400 µg/ft^2
*Wherever possible, sample hard floors instead of carpet.	
Bare soil (child contact areas) Includes building perimeter and yard.	400 ppm

IOWA LEAD & ASBESTOS SAFETY

114

PROVIDE GUIDANCE TOWARDS REDUCING OR ELIMINATING HAZARDS

- Inspector should recommend specific hazard control strategies.
- Recommendations should be based on cost and feasibility. If you tell people to do things that are clearly abatement, you need to tell them that they must hire a certified contractor to do the work.
- Recommended re-evaluation schedules.
- Provide Cost estimates if qualified

IOWA LEAD & ASBESTOS SAFETY

115

WHAT IF NO HAZARDS ARE IDENTIFIED?

- Unless complete lead inspection was done, untested painted surfaces should be treated as if lead-based paint.
- Report should state that no hazards were found on date of inspection, but that hazards could develop if paint deteriorates or is disturbed.

IOWA LEAD & ASBESTOS SAFETY

116

PROVIDE A WRITTEN REPORT

1. Identifying information.
2. Completed management, maintenance, and environmental results forms and analyses.
3. Lead hazard control plan.
4. All laboratory data.

IOWA LEAD & ASBESTOS SAFETY

117

RISK ASSESSMENTS FOR MULTI-FAMILY HOUSING

1. Five or more similar rental dwellings.
2. Less than five similar rental dwellings
3. Multiple dwellings that are NOT similar.

IOWA LEAD & ASBESTOS SAFETY

118

SELECTION OF DWELLINGS FOR FIVE OR MORE SIMILAR RENTAL DWELLINGS

1. Random sampling—used for inspections to determine if property is free of lead-based paint.
2. Targeted sampling—select dwellings most likely to contain hazards based on information from the owner/manager.
3. Worst case sampling—select worst units based on a walk-through survey of all units.
4. HUD recommends targeted sampling for most risk assessments.
5. Use random or worst case sampling if owner cannot provide information about occupancy status and physical condition of dwelling or if owner appears to be concealing information.

IOWA LEAD & ASBESTOS SAFETY

119

MINIMUM NUMBER OF TARGETED DWELLINGS TO BE SAMPLED AMONG SIMILAR DWELLINGS
(Random sampling may require additional units.)

Number of Similar Dwellings	Number of Dwellings to Sample*
1-4	All
5-20	4 units or 50% (whichever is greater)**
21-75	10 units or 20% (whichever is greater)**
76-125	17
126-175	19
176-225	20
226-300	21
301-400	22
401-500	23
501 or more	24 plus 1 dwelling for each additional increment of 100 dwellings or less

*Subtract dwellings housing children with elevated blood lead levels.
**For percentages, round up to determine number of dwellings to be sampled.

IOWA LEAD & ASBESTOS SAFETY

120

WHICH UNITS SHOULD BE SELECTED?

Dwellings should meet as many of the following criteria as possible (most important listed first):

- Cited with housing or building code violations within the past year.
- Owner believes dwelling is in poor condition.
- Two or more children aged 6 months to 6 years live in the dwelling.

  (Give preference to dwellings with largest number of children.)
- Dwellings that serve as day-care facilities.
- Dwellings prepared for re-occupancy.
- If additional dwellings are needed, select randomly.

IOWA LEAD & ASBESTOS SAFETY

121

LESS THAN FIVE SIMILAR RENTAL DWELLINGS

All units must be assessed.

IOWA LEAD & ASBESTOS SAFETY

122

FIVE OR MORE DWELLINGS THAT ARE NOT SIMILAR

1. Assess all dwellings.
2. If pattern can be established, samples 25% of the total
3. (at least five units). Choose first group from units thought to be at highest risk. If no clear pattern emerges, continue sampling.
4. This can get VERY expensive.

IOWA LEAD & ASBESTOS SAFETY

123

EVALUATING DUST HAZARDS FOR TARGETED, WORST CASE, OR RANDOM SAMPLING

1. Calculate the arithmetic mean for each type of component (floors, interior window sills, window troughs, carpeted floors).
2. If dust lead level exceeds dust standard for component, hazard has been identified for that component in all buildings.
3. If mean is below standard, but some results are above, treat individual surfaces (and similar surfaces) to remediate hazard.
4. May need additional testing, or owner may decide that cleaning all surfaces costs less than additional testing.

IOWA LEAD & ASBESTOS SAFETY

124

EVALUATING PAINT HAZARDS FOR TARGETED, WORST CASE, OR RANDOM SAMPLING

- Analyze by component and location.
- Can conclude that hazard does or does not existthroughout complex. Can NOT conclude that lead-based paint does not exist throughout complex.

IOWA LEAD & ASBESTOS SAFETY

125

LEAD HAZARD SCREEN

Low-cost method of assessing lead hazards in post-1960 homes that are in good condition.

Negative screen: can determine hazards are NOT present. CANNOT identify specific hazards if screen is failed.

IOWA LEAD & ASBESTOS SAFETY

126

LEAD HAZARD SCREEN PROTOCOL

1. Complete Form 5.1. Is dwelling in good condition or poor condition? If good condition, proceed with lead hazard screen. If poor condition, conduct full risk assessment.
2. Walk through to check paint surfaces and choose locations for dust sampling.
3. Must sample "all deteriorated paint" and surfaces that show evidence of friction or impact.
4. Must take dust samples on floors and interior window sills (single surface or composite).
5. Must sample bare soil.

IOWA LEAD & ASBESTOS SAFETY

127

COMPOSITE PAINT CHIP SAMPLING

- Inspector can composite multiple paint chip samples into one sample to save costs.
- Find out if lab will do this.
- If results are reported in percent by weight, let the lab combine the samples.
- If results are to be reported in mg/cm^2, inspector can combine samples, but ONLY if all areas are EXACTLY the same (use a template).

IOWA LEAD & ASBESTOS SAFETY

128

INTERPRETING RESULTS OF COMPOSITE PAINT CHIP SAMPLING

Divide the action level by the number of subsamples (no more than 5) to get the action level for the composite samples.

Example: 5 subsamples. Action level will be 1.0/5 or 0.2 mg/cm^2.

Example: 5 subsamples. Action level will be 0.5/5 = 0.1% by weight.

If the action level is NOT exceeded, then none of the samples are greater than the level for lead-based paint.

If the action level IS exceeded, at least one sample exceeds the limit, but no way of knowing which one.

IOWA LEAD & ASBESTOS SAFETY

129

DUST SAMPLING LOCATIONS FOR LEAD HAZARD SCREENS

(MAY BE EITHER SINGLE SURFACE OR COMPOSITE)

1. **Floors and interior window sills.**
2. **Child's principal play area, child's bedroom, main entryway, and one additional location determined by inspector.**

IOWA LEAD & ASBESTOS SAFETY

130

LEAD HAZARD SCREENS FOR MULTI-FAMILY HOUSING

Use same criteria as for risk assessments to choose units for sampling.

IOWA LEAD & ASBESTOS SAFETY

131

HAZARD LEVELS FOR LEAD HAZARD SCREEN

MEDIA	LEVEL
Deteriorated paint (single surface).	Greater than or equal to 1 mg/cm^2 OR Greater than 0.5% by weight.
Deteriorated paint (composite sample)	0.5% by weight or 1 mg/cm^2 Number of subsamples
Composite Dust Samples (wipe sampling only)	
Carpeted floors*	≥25 µg/ft^2
Hard floors	≥25 µg/ft^2
Interior window sills.	≥125 µg/ft^2
*Wherever possible, sample hard floors instead of carpet.	
Bare soil (child contact areas) Includes building perimeter and yard.	400 ppm

IOWA LEAD & ASBESTOS SAFETY

132

PASS/FAIL CRITERIA FOR LEAD HAZARD SCREEN

- If dust lead or soil lead levels in table are exceeded, dwelling fails the screen.
- If deteriorated paint is lead-based paint, dwelling fails the screen.
- If dwelling fails screen, complete risk assessment should be done.

IOWA LEAD & ASBESTOS SAFETY

133

RE-EVALUATION

REQUIRED for certain HUD projects and recommended for most others

- Required for project based housing receiving >$5,000/unit.
- Required for housing owned by a PHA where total abatement is not yet complete.
- *Must be completed by certified inspector/risk assessor.

IOWA LEAD & ASBESTOS SAFETY

134

RE-EVALUATION

Not required if:

1. An initial risk assessment found no LBP hazards;
2. Lead-free inspection found no LBP;
3. All LBP found during an inspection was abated, provided that any enclosures or encapsulants have not failed (ongoing monitoring by the owner would identify a failure in these instances).

IOWA LEAD & ASBESTOS SAFETY

135

RE-EVALUATION

Conducted to identify:

1. Deteriorated paint surfaces with known or suspected LBP;
2. Deteriorated or failed interim controls, encapsulations, or enclosures;
3. Dust-lead hazards and soil-lead hazards.

IOWA LEAD & ASBESTOS SAFETY

136

RE-EVALUATION

Schedule

Initial reevaluation no later than two years from completion of hazard reduction activities.

Subsequent reevaluations at intervals of two years ± 60 days.

If at least two consecutive reevaluations find no hazards, then no further reevaluations are required.

IOWA LEAD & ASBESTOS SAFETY

137

RE-EVALUATION

Unit Selection

Units and common areas should be selected using the same methods and tables described for risk assessments. These are:

- Targeted (table 2)
- Random (table 1)
- Worst case (table 2)

Only worksites with similar hazard reduction activities can be grouped together.

IOWA LEAD & ASBESTOS SAFETY

138

RE-EVALUATION
Steps

1. Review of available information.
2. Visual assessment.
3. Paint and soil sampling (if needed).
4. Reaction to any identified hazards by property owner.
5. Dust sampling and/or clearance testing.
6. Reevaluation report (and clearance results if necessary).

IOWA LEAD & ASBESTOS SAFETY

139

RE-EVALUATION
Review of available information

Collect and review all available information regarding the property history as it pertain to lead.
This includes:

- Previous inspections or risk assessments
- Previous lead hazard reduction activities
- Clearance reports
- Ongoing monitoring and maintenance activities
- Other relevant building information

IOWA LEAD & ASBESTOS SAFETY

140

RE-EVALUATION
Visual assessment

1. Evaluate all previous lead hazard reduction treatments.
2. Look for deterioration of any known or suspected LBP.
3. Check for new areas of bare soil on each exterior side.

If there is no deteriorated paint, no new bare soil, and no failures of previous hazards reduction treatments, then move on to the dust sampling step.

IOWA LEAD & ASBESTOS SAFETY

141

RE-EVALUATION

Paint and soil sampling (if needed)

Paint sampling is only necessary if there is deteriorated paint and if reliable information about that paint's lead content is unavailable.

Soil sampling is only necessary if there are new areas of bare soil and if the soil lead levels have not been analyzed previously.

IOWA LEAD & ASBESTOS SAFETY

142

RE-EVALUATION

Visual assessment

If any previous hazard reduction activities were omitted or failed or if any new hazards are identified then:

1. **Determine acceptable control options for the identified hazards.**
2. **Await the correction of the hazards by the property owner.**

IOWA LEAD & ASBESTOS SAFETY

143

RE-EVALUATION
Dust sampling

If there were no hazards identified and all past lead hazard treatments are still effective, then at least two composite dust samples should be taken from floors and sills.

- **Each composite sample must consist of 4 sub-samples.**
- **If sampling both carpeted and non-carpeted floors use two separate composites.**
- **Equivalent single surface sampling may be used instead of composite sampling.**

IOWA LEAD & ASBESTOS SAFETY

144

RE-EVALUATION
Dust sampling/clearance testing

If the reevaluation identifies any hazards (including high dust levels) then the reevaluation basically turns into a clearance inspection at that point.

Rational: property owners are required to fix any identified hazards and pass clearance testing. Rather than take additional dust samples f or the reevaluation, you can just take the clearance samples.

IOWA LEAD & ASBESTOS SAFETY

145

RE-EVALUATION

Reports

If no hazards are identified during the reevaluation then the property passes and a reevaluation report must be issued.

If there were any hazards identified then the property fails the reevaluation and a reevaluation/clearance report must be issued.

IOWA LEAD & ASBESTOS SAFETY

146

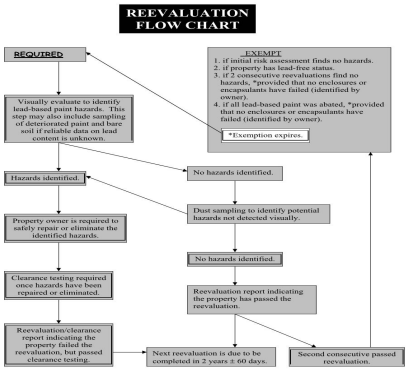
RE-EVALUATION Reports should include:

In addition to the information required for all lead reports, reevaluations should include:

- **All data gathered for review step.**
- **Detailed information about effectiveness of past control measures, and repair options for newly identified hazards.**
- **An indication of whether or not the property passed or failed. Include all laboratory information and results.**
- **An indication of when the next reevaluation, if any, should occur.**

IOWA LEAD & ASBESTOS SAFETY

147



IOWA LEAD & ASBESTOS SAFETY

148

WHAT IS THE MOST APPROPRIATE EVALUATION PROCESS?

1. Lead-free inspection.
2. Lead hazard screen or risk assessment.
3. Re-evaluation.
4. Lead inspection.
5. Visual risk assessment.
6. Bypassing hazard identification.

IOWA LEAD & ASBESTOS SAFETY

149

FACTORS TO CONSIDER

1. Why does the owner want an evaluation done?
2. Based on age of dwelling, how likely is it that hazards will be found?
3. Based on funds and life expectancy of unit, what are likely hazard control options?
4. Financial resources of owner.
5. Future plans for the building.

IOWA LEAD & ASBESTOS SAFETY

150

WHY IS OWNER HAVING THE EVALUATION DONE?

- To opt out of real estate disclosure for rental property.
- Other legal or insurance requirements (HUD Section 8).
- At sale of property.
- Concerned about liability.
- Primary prevention for children who may be at risk.
- Primary prevention before renovation, remodeling, or repainting.
- Secondary prevention for a lead-poisoned child.

IOWA LEAD & ASBESTOS SAFETY

151

CHOICES MAY BE LIMITED

To opt out of real estate disclosure for rental property, must be free of lead-based paint.

HUD or insurance company may dictate the type of assessment.

For EBL child, inspection must be conducted by appropriate local authority.

IOWA LEAD & ASBESTOS SAFETY

152

7 TYPES OF INSPECTIONS OR ASSESSMENTS

Analysis, Content, or Use	Lead-Free Inspection	Risk Assessment	Lead Hazard Screen	Lead Inspection	Visual Risk Assessment	EBL Inspection	Reevaluation
Paint	Test all painted components. All 4 walls.	Test deteriorated paint only.	Test deteriorated paint only.	Test all painted components.	No paint testing.	Test all painted components.	Test deteriorated paint only if lead content is unknown.
Dust	No	Yes	Yes	Usually assumed	Assumed	Not currently*	Yes
Soil	No	Yes	Yes, if paint chips visible in soil	Usually assumed	Assumed	Not currently*	Test bare soil only if lead content is unknown.
Water	No	Optional	Optional	No	No	No	No
Maintenance Status	No	Optional	No	Sometimes	Sometimes	Sometimes	Yes
Management Plan	No	Optional	No	No	No	No	Yes
Status of EBL Children	No	If info is available	If info is available	If info is available	If info is available	Yes	If info is available

*As of December of 05, EBL inspections don't generally involve dust and soil sampling. Be aware that this may change in July of 06 because of new CDC requirements.

IOWA LEAD & ASBESTOS SAFETY

153

7 TYPES OF INSPECTIONS OR ASSESSMENTS

Analysis, Content, or Use	Lead-Free Inspection	Risk Assessment	Lead Hazard Screen	Lead Inspection	Visual Risk Assessment	EBL Inspection	Reevaluation
Typical application	Opt out of disclosure requirements for rentals Sale of property Allows owner to avoid treating surfaces not painted with LBP.	Interim controls Building near end of expected life Sale of property HUD or other program requirement Insurance requirement	Post 1960 property in good condition Insurance requirement	Owner information Primary prevention Sale of property HUD or other program requirement	Owner information Primary prevention Sale of property HUD or other program requirement	EBL child	HUD or other program requirement

IOWA LEAD & ASBESTOS SAFETY

154

7 TYPES OF INSPECTIONS OR ASSESSMENTS

Analysis, Content, or Use	Lead-Free Inspection	Risk Assessment	Lead Hazard Screen	Lead Inspection	Visual Risk Assessment	EBL Inspection	Reevaluation
Final Reports All reports- Definition of LBP Signed by certified person doing the work	All XRF readings Statement of whether or not the property if free of LBP Visual assessment of any hazards Info regarding how to eliminate hazards	Lead hazard control plan or certification of lead-based paint compliance	Lab results and whether or not the property passed/failed the screen. Recommend for further testing?	XRF Calibration All XRF readings Visual assessment of any hazards Info regarding how to eliminate hazards	Visual assessment of any hazards General recommendations for hazard control	All XRF readings Visual assessment of any hazards Info regarding how to eliminate hazards Assessment of other sources of lead exposure, child's behavior, etc.	Lab results and whether or not the property passed/failed the reevaluation. Recommend future reevaluations?

IOWA LEAD & ASBESTOS SAFETY

155

ALL FINAL REPORTS

Must Be Completed In 3 Weeks

- **The 3 weeks begins after the results of any laboratory analysis are received.**
- **Exception: EBL reports must be completed in 2 weeks.**

IOWA LEAD & ASBESTOS SAFETY

156

ALL FINAL REPORTS

Must Be Completed By An Iowa Certified Inspector/Risk Assessor

- Iowa certified inspector/risk assessor and firms are the only parties who can issue a report in Iowa.
- Individuals and/or firms not certified in Iowa may not alter or take credit for inspectors performed by Iowa certified inspector/risk assessors.

IOWA LEAD & ASBESTOS SAFETY

157

Residential Lead Abatement

IOWA LEAD & ASBESTOS SAFETY

158

ABATEMENT STRATEGIES

Replacement of building components that contain lead-based paint.

- Enclosure of lead-based paint.
- Removal of lead-based paint.
- Encapsulation of lead-based paint.
- Removal of lead contaminated dust.
- Removal or covering of lead contaminated soil.

IOWA LEAD & ASBESTOS SAFETY

159

ABATEMENT STRATEGIES

- Enclosure and building component replacement are least hazardous abatement methods.
- Paint removal is most hazardous abatement method..

IOWA LEAD & ASBESTOS SAFETY

160

PROHIBITED PAINT REMOVAL METHODS

- Open flame burning or torching.
- Dry scraping or sanding (except for limited areas).
- Machine sanding or grinding without HEPA exhaust tool.
- Uncontained hydro blasting or high-pressure wash.
- Abrasive blasting or sandblasting without HEPA exhaust tool.
- Heat guns operating above 1,100º F.

IOWA LEAD & ASBESTOS SAFETY

161

DIFFERENCE BETWEEN ENCLOSURE AND ENCAPSULATION

- Enclosure attaches to surface with mechanical fasteners.
- Encapsulation relies on bond between encapsulant product and surface.

IOWA LEAD & ASBESTOS SAFETY

162

ENCAPSULATION BARRIER

1. **Liquid-applied coating, with or without reinforcement materials.**
2. **Material bonds adhesively to component surface.**
3. **May be attached with mechanical fasteners, but primary means of attachment is by bonding to surface.**
4. **Must have successful bond between surface of existing paint film and encapsulant.**
5. **ALL layers of existing paint must adhere well to each other AND to substrate.**

IOWA LEAD & ASBESTOS SAFETY

163

Before Encapsulation

After Fiber Lock LBC Encapsulant

IOWA LEAD & ASBESTOS SAFETY

164

UNSUITABLE SURFACES

- **Chewable, friction, and impact surfaces.**
- **Deteriorated components.**
- **Deteriorated paint films.**
- **Components affected by moisture problems.**
- **Surfaces with known incompatibility between existing coating layers.**

IOWA LEAD & ASBESTOS SAFETY

165

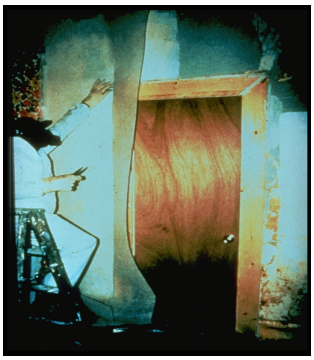
SUITABLE SURFACES

Non-deteriorated substrates that have a reasonably stable lead-based paint film, subject to:

1. **Patch test.**
2. **Visual evaluation.**
3. **Surface deterioration.**
4. **Interfacial and other film integrity properties.**

IOWA LEAD & ASBESTOS SAFETY

166



IOWA LEAD & ASBESTOS SAFETY

167

ABATEMENT OF LEAD-CONTAMINATED SOIL

Use when lead in soil exceeds 5,000 ppm.

IOWA LEAD & ASBESTOS SAFETY

168

METHODS OF SOIL ABATEMENT

1. Soil removal and replacement.
2. Soil cultivation.
3. Soil treatment and replacement.
4. Permanent covering.

IOWA LEAD & ASBESTOS SAFETY

169

SOIL REMOVAL AND REPLACEMENT

1. Remove top six inches of soil.
2. Replacement soil cannot exceed 200 ppm lead concentration.
3. Records of soil sampling and abatement should remain with permanent property records.

IOWA LEAD & ASBESTOS SAFETY

170

IOWA LEAD & ASBESTOS SAFETY

171

SOIL REMOVAL
LEAST PREFERRED METHOD

1. Cost of hauling large quantities of soil.
2. May be difficult to local disposal sites for soil.
3. Reduces need for uncontaminated replacement soil.

IOWA LEAD & ASBESTOS SAFETY

172

SOIL CULTIVATION

1. Thoroughly mix topsoil with soil at greater depths to reduce overall lead concentration.
2. Suitable if average lead concentration is below 1,500 ppm.
3. Experiment with different mixing methods and depths to determine what works for each site.

IOWA LEAD & ASBESTOS SAFETY

173

PERMANENT COVERING

- Cover soil in high-traffic areas with high-quality concrete or asphalt.
- Not necessary to remove the contaminated soil.

IOWA LEAD & ASBESTOS SAFETY

174

CLEARANCE TESTING

IOWA LEAD & ASBESTOS SAFETY

175

WHEN IS CLEARANCE TESTING REQUIRED?

Required by law for all abatement projects.

For HUD-assisted housing, if a maintenance or hazard reduction activity disturbs painted surfaces that total more than:

1. **20 square feet on exterior surfaces.**
2. **2 square feet in any one interior room or space.**
3. **10 percent of the total surface area on any interior or exterior type of component with a small surface area (window sills, baseboards, and trim.)**

IOWA LEAD & ASBESTOS SAFETY

176

WHO CAN DO CLEARANCE INSPECTIONS?

- **For clearance after abatement, must be a certified inspector/risk assessor.**
- **For clearance after interim controls, paint stabilization, standard treatments, or rehabilitation pursuant to HUD regulations, must be a certified sampling techician (Iowa regulations).**

IOWA LEAD & ASBESTOS SAFETY

177

VISUAL EXAMINATION

Paint Removal and Repainting

- **Examine all surfaces where paint has been removed before repainting to ensure paint was really removed. (This will mean two trips because dust sampling not done until AFTER surfaces are repainted.)**
- **Examine bare surfaces to ensure there is no visible residue.**

IOWA LEAD & ASBESTOS SAFETY

178

VISUAL EXAMINATION

Building Component Removal and Replacement

- **Verify actual removal.**
- **Verify that no components were overlooked.**

IOWA LEAD & ASBESTOS SAFETY

179

VISUAL EXAMINATION

Enclosures and Encapsulants

- **Verify that fastening method used for enclosure is adequate.**
- **Verify that seams and edges in enclosure are "dust-tight".**
- **Verify that encapsulants are present.**

IOWA LEAD & ASBESTOS SAFETY

180

CLEARANCE INSPECTION MULTIFAMILY HOUSING (>20 units) POST-ABATEMENT

- Random sampling is permitted.
- If testing fails, the affected component in all units represented by random sample must be re-cleaned and retested.
- May be cheaper to have all units sampled to determine those needing additional cleaning.
- Insurance carriers covering hazard control work may require testing of all units.

IOWA LEAD & ASBESTOS SAFETY

181

CLEARANCE INSPECTION MULTIFAMILY HOUSING (>20 units) INTERIM CONTROLS

- Can be done by a certified visual risk assessor ONLY if all units are sampled. Cannot do random sampling.

IOWA LEAD & ASBESTOS SAFETY

182