



Lead Sampling Technician

8-hour Refresher Training Course

Revision 11.2024

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1

COURSE OVERVIEW

- Health Effects
- Blood Lead Data & Housing Data
- Iowa Definitions
- Regulations
- Identifying Lead-Based Paint Hazards
- Lead Hazard Control
- Clearance Testing



2

HEALTH EFFECTS OF LEAD IN CHILDREN

Exposure to lead can seriously harm a child's health and cause well-documented adverse effects such as:

- Damage to the brain and nervous system
- Slowed growth and development
- Learning and behavior problems
- Hearing and speech problems



3

The neurobehavioral effects of childhood lead exposure appear to be long-lasting.



4

COMMON SYMPTOMS OF LEAD POISONING IN CHILDREN

- Behavior and learning problems
- Slowed growth
- Hearing problems
- Anemia
- Irritability
- Loss of appetite
- Fatigue

Most lead-poisoned children have no symptoms.

The only way to tell if a child is lead poisoned is to do a blood test.



5

HEALTH EFFECTS OF LEAD IN ADULTS

- High blood pressure
- Brain, kidney and reproductive health issues
- Nerve disorders
- Memory and concentration problems
- Muscle and joint pain

Lead exposure is dangerous for adults, and there are many sources for exposure in the workplace or with hobbies. Lead can be **inhaled** through fumes and dust, **ingested** if dust settles on your hands or other objects, or **absorbed** through the skin.



6

COMMON SYMPTOMS OF LEAD POISONING IN ADULTS

- Headaches
- Stomach cramps
- Constipation
- Muscle/joint pain
- Numbness in feet and legs
- Trouble sleeping, fatigue, irritability
- Loss of sex drive
- Infertility

Most adults with lead poisoning don't look or feel sick.
The only way to tell if an adult is lead poisoned is to do a blood test.



7

HOW LONG DOES LEAD STAY IN THE BODY?

Lead initially shows up in the blood.

If exposure stops, the turnover time for lead in blood is 30 to 60 days.

If exposure continues, lead enters soft tissue (organs).

If exposure stops, the turnover time for lead in soft tissue is 60 to 90 days.

If exposure continues, lead enters bone.

If exposure stops, the turnover time for lead in bones is approximately 40 years.



8

SCREENING



9

UNIVERSAL SCREENING

CDC recommends that all children be screened for lead poisoning with a blood lead test.

- Assess risk through questionnaire.
- Screen high-risk children and low-risk children starting at age of 12 months.
- Some children will be screened up to the age of 6 years.



10

Children Under Age 6 Universal Testing Measures

Why are these measures important?

- Early detection and referral for treatment of lead poisoning.
- Reduce the incidence, impact, and cost of lead poisoning.
- Inform parents and guardians of their children's exposure to lead.
- Promote the importance of reducing exposure to lead as an integral component of preparation for school and learning.



11

Children Under Age 6 Universal Testing Measures

- Elevated levels can harm a child's central nervous system, and are associated with:
 - Reduced IQ
 - Behavioral problems
 - Learning disabilities
- Early detection and referral for services can
 - Reduce the incidence, impact, and cost of lead poisoning
 - Inform parents and guardians of their children's exposure to lead



12

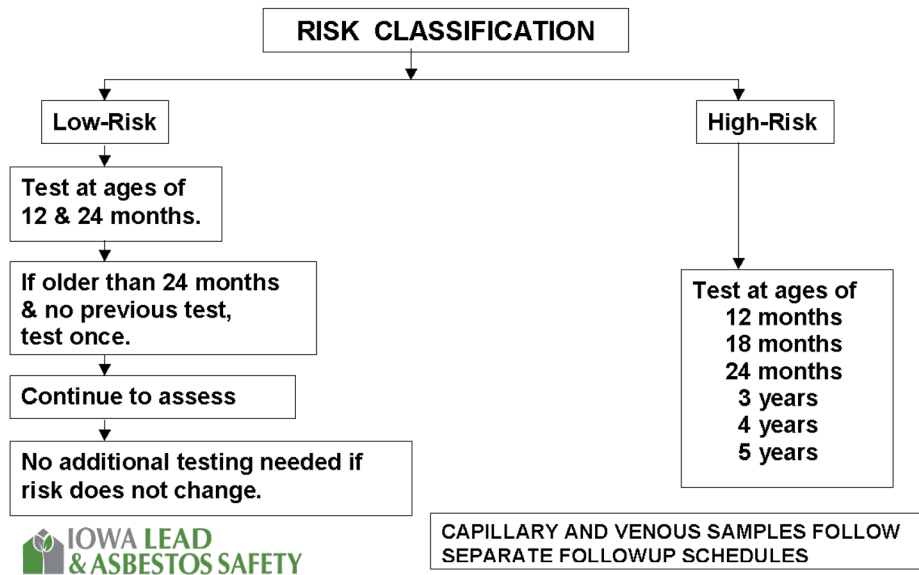
BLOOD LEAD TESTING FOR CHILDREN

- Screening samples can be capillary (fingerstick) samples.
Must be careful to avoid contaminating sample with lead from the child's hand.
- Capillary blood lead levels ≥ 3.5 $\mu\text{g/dL}$ must be confirmed with a venous test at the appropriate intervals.
- Decision to investigate environment or to treat child is made on the basis of venous blood lead levels.



13

BASIC LEAD TESTING CHART (Based on Risk and Age)



14

CDC THRESHOLD FOR LEAD POISONING IN CHILDREN

- May 2012 CDC set a level of 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) as the threshold for lead poisoning in children.
- October 2021 CDC updated and LOWERED the level from 5.0 $\mu\text{g}/\text{dL}$ to 3.5 $\mu\text{g}/\text{dL}$

The new lower blood lead reference value of 3.5 $\mu\text{g}/\text{dL}$ means that more children could be identified as having lead exposure allowing parents, doctors, public health officials, and communities to act earlier to reduce the child's future exposure to lead.



15

INITIAL SCREENING CAPILLARY BLOOD LEAD LEVELS

< 10 $\mu\text{g}/\text{dL}$

Provide education about common sources of lead exposure and information on how to prevent further lead exposure.

$\geq 10 \mu\text{g}/\text{dL}$

If the capillary results are equal to or greater than 10 $\mu\text{g}/\text{dL}$ providers should obtain a confirmatory venous sample for blood lead testing.



16

CDC FOLLOW UP **CAPILLARY** BLOOD LEAD LEVELS

Table 1: Recommended Schedule for Obtaining a Confirmatory Venous Sample

Blood Lead Level (µg/dL)	Time to Confirmation Testing**
≥3.5–9	Within 3 months
10–19	Within 1 month
20–44	Within 2 weeks
≥45	Within 48 hours

**The higher the BLL is on the initial screening capillary test, the more urgent it is to get a venous sample for confirmatory testing.



17

INITIAL SCREENING **CAPILLARY** BLOOD LEAD LEVELS

< 10 µg/dL

Provide education about common sources of lead exposure and information on how to prevent further lead exposure.

≥ 10 µg/dL

If the capillary results are equal to or greater than **10 µg/dL** providers should obtain a confirmatory venous sample for blood lead testing.



18

INITIAL SCREENING VENOUS BLOOD LEAD LEVELS

<10 µg/dL

- Provide education about common sources of lead exposure and information on how to further prevent exposure.
- Conduct follow-up blood lead testing at recommended intervals based on the child's age.



19

INITIAL SCREENING VENOUS BLOOD LEAD LEVELS

≥ 10-14 µg/dL

- Provide information and education about common sources of lead exposure and information on how to further prevent exposure to parents.
- Follow up BLL testing at 12 weeks.



20

INITIAL SCREENING VENOUS BLOOD LEAD LEVELS

15-19 µg/dL

- Provide information and education to parents
- Provide nutritional evaluation/counseling
- Follow up BLL testing at 12 weeks
- After 2 venous levels of 15-19, provide environmental investigation or assessment of lead hazards



21

INITIAL SCREENING VENOUS BLOOD LEAD LEVELS

20-44 µg/dL

- At this level, Iowa HHS recommends more frequent testing, every 4-6 weeks, to make sure the level does not get any higher.
- Provide information and education to parents
- Provide nutritional evaluation/counseling
- Provide environmental investigation or assessment of lead hazards
- Chelation NOT recommended



22

INITIAL SCREENING VENOUS BLOOD LEAD LEVELS

45-69 μ g/dL

- Provide information and education to parents
- Provide nutritional evaluation/counseling
- Perform a complete history and physical exam, assessing the child for signs and symptoms related to lead exposure.
- Perform an environmental investigation of the home and a lead hazard reduction program.
- Child may be chelated



23

INITIAL SCREENING VENOUS BLOOD LEAD LEVELS

≥ 70 μ g/dL

MEDICAL EMERGENCY!

- **Begin medical treatment and
environmental investigation**

IMMEDIATELY



24

IOWA HHS: FOLLOW UP VENOUS BLOOD LEAD LEVELS

Venous Blood Lead Levels (µg/dL)	Follow Up Testing
>10	12 weeks
10-14	12 weeks
15-19	12 weeks
20-44	4-6 weeks
≥ 45	Re-test before chelation, at the end of chelation, and 7 days after



25

Adult Blood Lead Testing Measures



26

WHEN IS BLOOD LEAD TESTING INDICATED FOR ADULTS?

1. When an adult works with lead on the job.
2. When an adult works with lead in a hobby.
3. When an adult has conducted removal of lead-based paint without following the appropriate precautions.



27

BLOOD LEAD LEVELS OF CONCERN IN ADULTS

Adult males and adult females should keep their blood lead levels less than 10 $\mu\text{g}/\text{dL}$. (This may not be sufficient to protect children from take-home lead exposure.)



28

ADULT BLOOD LEAD LEVEL MEASURES



Why are these measures important?

- Lead exposure in adults can cause short-term and long-term health problems
- Take-home exposure from work or hobbies outside the home can be a source of exposure for children
- Industries with potential lead exposure
 - Automotive batteries
 - Manufacturing, Scrap, or Recycling of metal fixtures and electronics
 - Construction and Renovation
 - Indoor Firing Ranges
 - Stained Glass Artisans

29

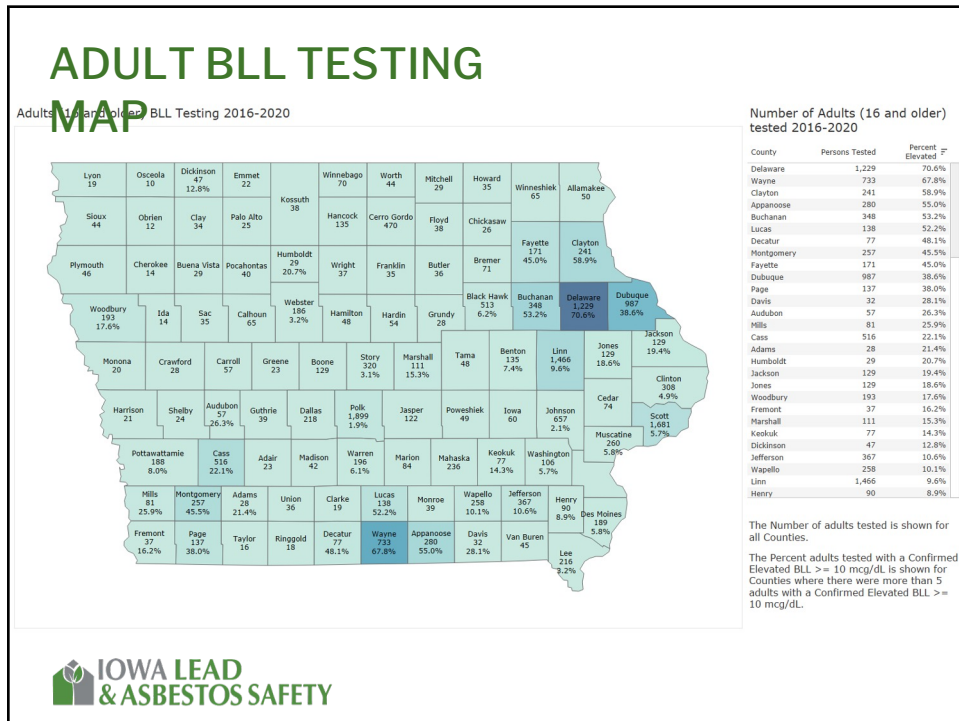
ADULT BLOOD LEAD LEVEL MEASURES



What data is available?

- Number of Adults (Age 16 and Older) Tested Annually
- Percent of Adults (Age 16 and Older) Tested that had and Elevated Blood Lead Level greater than or equal to 10 mcg/dL

30



31

SUMMARY OF LOWEST-OBSERVED-EFFECT LEVELS FOR					
KEY LEAD-INDUCED HEALTH EFFECTS IN ADULTS					
Lowest-observed-effect level (PbB) micrograms/deciliter	Heme synthesis and hematological effects	Neurological effects	Effects on the kidney	Reproductive function effects	Cardiovascular effects
100-120		Encephalopathy	Chronic nephropathy		
80	Frank anemia		" "		
60			" "	Female reproductive effects	
50	Reduced hemoglobin production	Subtle subencephalopathic symptoms	" "	Altered testicular function	
40	Increased urinary ALA and elevated protoporphyrin	Peripheral nerve dysfunction	" "	" "	
30		" "			Elevated blood pressure
25-30	Erythrocyte protoporphyrin elevation in males				" "
15-20	Erythrocyte protoporphyrin elevation in females				" "
<10	ALA-D inhibition				" "

IOWA LEAD & ASBESTOS SAFETY

32

LEAD EXPOSURE RISK FACTOR MEASURES



33

HOW ARE CHILDREN EXPOSED TO LEAD?

Children under the age of 6 years explore their environment with hands and their mouths. While they are doing this, they have the perfect opportunity to come in contact with lead-based paint chips and household dust containing lead.

Most childhood exposure to lead occurs when children put paint chips in their mouths or put their hands or toys that have lead dust on them in their mouths. Some children also put soil, rocks, etc., in their mouths.



34

HOW ARE CHILDREN EXPOSED TO LEAD?

- Children can also pick up lead dust off their parent's clothes if their parents work with lead on the job or have been removing lead-based paint around their home.
- Children may inhale lead dust if they are in the immediate area when lead-based paint is being removed. Aside from this, inhalation is not the usual route of exposure for children.
- Children absorb up to 50% of the lead that they ingest.



35

EXPOSURE

- The risks of lead exposure are not based on theoretical calculations.
- The risks of lead exposure are well known from studies of children.
- They are not extrapolated from data on lab animals or high-dose occupational exposure.



36

LEAD EXPOSURE RISK FACTOR MEASURES

Why are these measures important?

- Lead poisoning occurs when a person has too much lead in his or her body
- There are multiple sources of lead in the environment
- There are other characteristics of a home and community that are associated with higher risk of lead exposure
- Knowing how common risks are in a community can help target surveillance and intervention efforts



37

LEAD EXPOSURE RISK FACTOR MEASURES

What data is available?

- Percent of homes built before 1950
- Percent of children under age 5 Living in Poverty
- Percent of households where the primary language spoken is not English



38

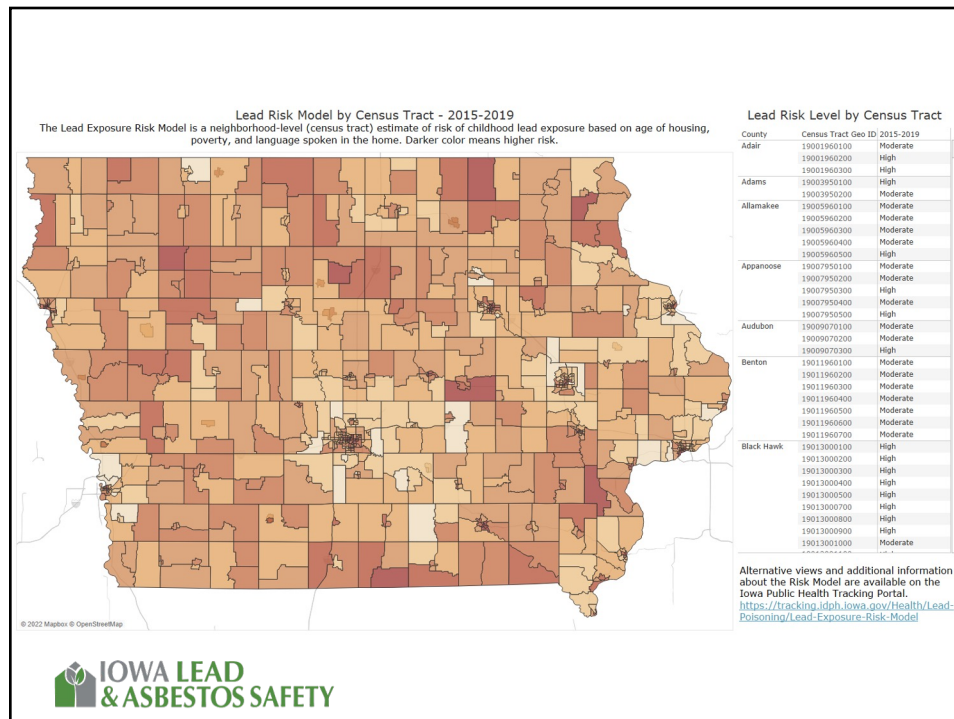
LEAD EXPOSURE RISK FACTOR MEASURES

Why these three measures?

- Children from all social and economic backgrounds can be affected, although the children at greatest risk of lead exposure are those who live in older housing and are living in poverty.
- Language is a critical component of risk communication for developing effective public health interventions. Those who do not speak English might be unaware of the dangers of lead.
- Although there are other risk factors for lead exposure, there is not always quality data available to measure these other risk factors



39



40

THE ROLE OF NUTRITION IN REDUCING LEAD ABSORPTION

- Children who eat regular meals and snacks absorb less than children who ingest lead on an empty stomach.
- Extremely high fat diets can increase lead absorption.



43

THE ROLE OF NUTRITION IN REDUCING LEAD ABSORPTION

Children with adequate calcium and iron intake absorb less lead.



There is no beneficial use of lead in the body, but lead cations are similar in size and shape to calcium and iron cations. Therefore, enzymes that are looking for calcium or iron might try to “make do” with lead if they can’t find calcium or iron. Once inside the blood stream and tissue, lead cannot take the place of iron and calcium. This disruption of iron and calcium metabolism leads to some of the health effects of lead.



44

EXPOSURE

WHY ARE CHILDREN AT HIGHER RISK FOR LEAD EXPOSURE THAN ADULTS?

- Children absorb more of the lead that they ingest than adults do.
- Children ingest more lead through hand-to-mouth activity.



45

EXPOSURE

ENVIRONMENTAL AND BEHAVIOR INTERVENTIONS TO REDUCE LEAD EXPOSURE

The main principle of any environmental or behavioral intervention to reduce lead exposure is to separate the source of lead from the child or adult.



46

EXPOSURE

TEMPORARY ENVIRONMENTAL AND BEHAVIORAL INTERVENTIONS TO REDUCE LEAD EXPOSURE IN CHILDREN

1. Keep the child away from areas of peeling and chipping paint:
 - Close windows where they like to play.
 - Keep them out of the room with the deteriorated paint.
 - Put contact paper on areas of deteriorated paint.
 - Move outdoor play areas away from the house.



47

EXPOSURE

2. Keep children out of the area when disturbing lead-based paint.
3. Keep the house clean enough to pass the “white glove” test.
4. Wash the child’s hands and toys frequently, especially before they eat.
5. Try to keep children from putting their hands, paint chips, soil, etc., in their mouths.



48

EXPOSURE

ENVIRONMENTAL INTERVENTIONS TO REDUCE LEAD EXPOSURE IN ADULTS

- Reduce the amount of dust and fumes produced when working with lead or lead-based paint.
- Wear respiratory protection to reduce the amount of lead inhaled.
- Wash hands and face before eating, drinking, or smoking.

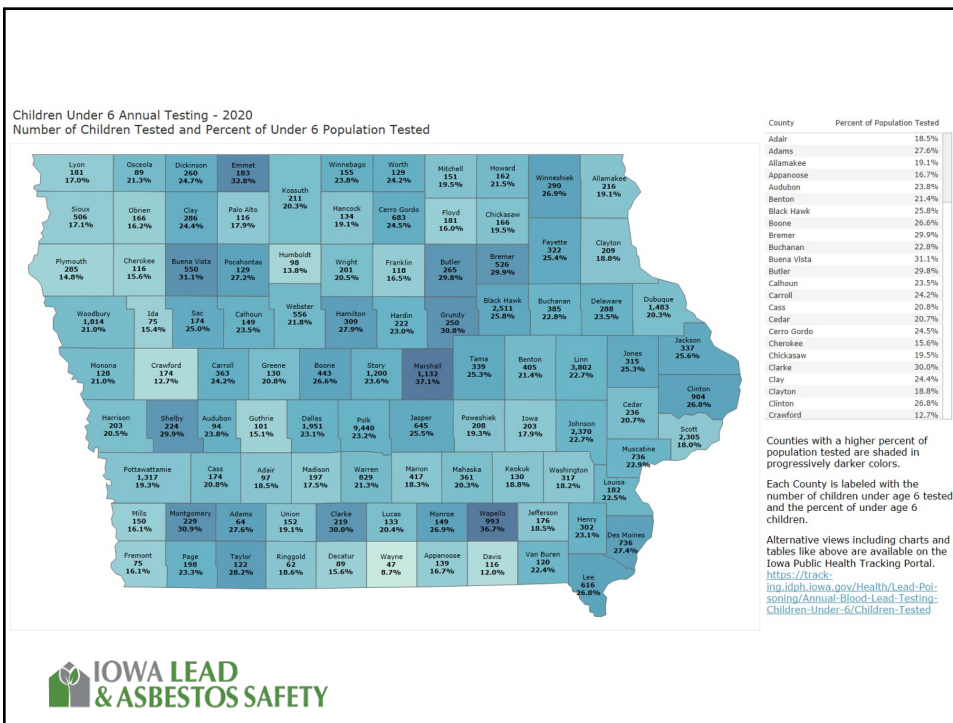


49

CHILDHOOD BLOOD LEAD LEVEL SERVEILLANCE IN IOWA



50



51

STATE OF IOWA CHILDHOOD BLOOD LEAD DATA

Classifying children with elevated blood leads:

1. Child categorized at their highest venous blood lead level if ≥ 20 $\mu\text{g}/\text{dL}$.
2. If child never had a venous test ≥ 20 $\mu\text{g}/\text{dL}$, used highest test of any type at 10-19 $\mu\text{g}/\text{dL}$.

52

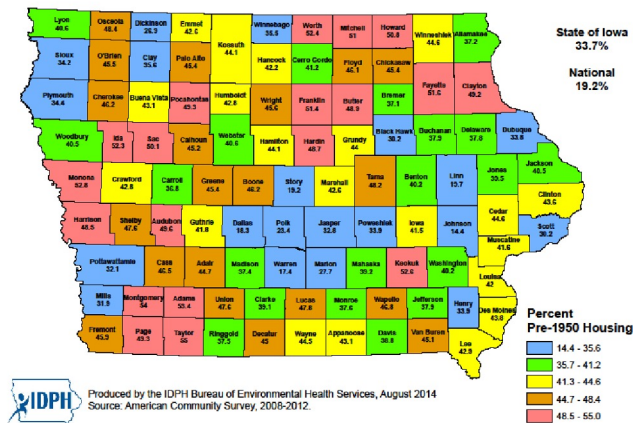
2020 HOUSING DATA CENSUS

Age of Housing Total Houses	Iowa Average 1,417,064	National Average 140,943,613
Built 1939 or earlier	347,202	16,976,512
Built 1950-1959	140,331	13,899,414
Built 1970-1979	201,398	20,613,893



53

Housing Built Before 1950 -- ACS 2008-2012



54

IOWA CHILDHOOD BLOOD LEAD DATA

WHY DOES IOWA HAVE SUCH A HIGH RATE OF LEAD POISONING?

1. Large amount of older (pre-1950 housing).
2. Less than optimum housing maintenance.
3. Lack of previous lead program in Iowa.



55

IOWA'S HOUSING DATA

- Virtually all pre-1950 housing contains lead-based paint and lead-based paint hazards.
- Iowa's smallest towns, rural areas, and areas/towns along rivers and railroads have largest amounts of old housing.



56

IOWA'S HOUSING MAINTENANCE

LESS THAN OPTIMUM HOUSING MAINTENANCE

- Poor rural and small town economies.
- No rental housing codes in rural areas and small towns.
- Belief that peeling/chipping paint is cosmetic.



57

HOW DO WE KNOW

HOW DO WE KNOW WHAT IS LEAD POISONING IOWA'S CHILDREN?

- IDPH or local health and housing agencies investigate all cases where a child has a venous blood lead level ≥ 20 $\mu\text{g}/\text{dL}$ or two levels of 15-19 $\mu\text{g}/\text{dL}$.
- We virtually always find deteriorated lead-based paint as the cause. Once this deteriorated paint is repaired, the child's blood lead level starts to go down.



58

IOWA DEFINITIONS



59

LEAD BASED PAINT

“Lead-based paint” means paint or other surface coatings that contain lead equal to or in excess of 1.0 milligrams per square centimeter, OR, more than 0.5 percent by weight.



60

LEAD BASED PAINT HAZARD

1. Hazardous lead-based paint, includes
 - a. All Deteriorated paint
 - b. Chewable surfaces
2. DUST-LEAD hazard,
3. SOIL-LEAD hazard.



61

TARGET HOUSING

Housing constructed before 1978, with the exception of housing for the elderly or disabled and housing without a bedroom, unless a child aged 6 years or less, resides or expected to reside there.



62

XRF

An XRF analyzer is an instrument that determines lead concentration in milligrams per square centimeter (mg/cm²) using the principle of x-ray fluorescence.



63

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.

64

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.



65

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.

It differs from a lead inspection in that only deteriorated paint is tested and soil and dust samples are taken.



66

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.



67

CLEARANCE TESTING

“Clearance testing” means an activity conducted following interim controls, lead abatement, paint stabilization, standard treatments, ongoing lead-based paint maintenance, or rehabilitation to determine that the hazard reduction activities are complete. Clearance testing includes a visual assessment, the collection and analysis of environmental samples, the interpretation of sampling results, and the preparation of a report.



68

ELEVATED BLOOD LEAD (EBL)

“Elevated blood lead (EBL) inspection” means an inspection to determine the sources of lead exposure for an EBL child and a providing a written report within ten working days 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.



69

VISUAL RISK ASSESSMENT

“Visual risk assessment” means a surface-by-surface visual assessment to determine the presence of deteriorated paint or other potential sources 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 assessment to the property owner and to the person requesting the visual risk assessment.

The housing quality standards (HQS) inspections done for HUD are NOT considered visual risk assessments.



70

PAINT STABILIZATION

“Paint stabilization” means repairing any physical defect in the substrate of a painted surface that is causing paint deterioration, removing loose paint and other material from the surface to be treated, and applying a new protective coating or paint.



71

LEAD ABATEMENT

“Lead abatement” means any measure or set of measures designed to **permanently** eliminate lead-based paint hazards.



72

LEAD ABATEMENT

Abatement includes, but is not limited to:

- The removal of lead-based paint and lead-contaminated dust,
- Permanent enclosure or encapsulation of lead-based paint,
- Replacement of lead-painted surfaces or fixtures, and
- Removal or covering of lead-contaminated soil.

ALSO INCLUDES all preparation, cleanup, disposal, repainting and refinishing and post-abatement clearance testing activities associated with such measures.



73

LEAD ABATEMENT

Lead abatement specifically includes, but is not limited to:

- Projects for which there is a written contract or other documentation, which provides that an individual will be conducting lead abatement in or around a residential dwelling or child-occupied facility.
- Projects for which there is a written contract or other document, which, provides that the individual will be conducting activities in or to a residential dwelling or child occupied facility that shall result in or are designed to permanently eliminate lead-based paint hazards.



74

LEAD ABATEMENT

Lead abatement specifically includes, but is not limited to:

- Projects resulting in the permanent elimination of lead-based paint hazards that are conducted by firms or individuals who, through their company name or promotional literature, represent, advertise, or hold themselves out to be in the business of performing lead-based paint abatement.
- Projects resulting in the permanent elimination of lead-based paint that are conducted in response to an abatement order.



75

LEAD ABATEMENT

Lead abatement does NOT include:

Renovation, remodeling, landscaping, or other activities, when such activities are not designed to permanently eliminate lead-based paint hazards but, instead, are designed to repair, restore, or remodel a given structure or dwelling, even though these activities may incidentally result in a reduction or elimination of lead-based paint hazards.

Abatement does not include interim controls, operations and maintenance activities, or other measures and activities designed to temporarily, but not permanently reduce lead-based paint hazards.



76

INTERIM CONTROLS

“Interim controls” means a set of measures designed to temporarily reduce human exposure or likely exposure to lead-based paint hazards, including specialized cleaning, repairs, maintenance, painting, temporary containment, ongoing monitoring of lead-based paint hazards or potential hazards, and the establishment and operation of management and resident education programs.



77



**What's the difference between
abatement and interim controls?**

Permanent controls vs. temporary controls



78

RENOVATION

Renovation means the modification of any existing structure, or portion thereof, that results in the disturbance of painted surfaces, unless that activity is performed as part of lead abatement as defined by this chapter. The term “renovation” includes, but is not limited to, the removal, modification, or repair of painted surfaces or painted components such as modification of painted doors, surface restoration, and window repair; surface preparation activity such as sanding, scraping, or other such activities that may generate paint dust; the partial or complete removal of building components such as walls, ceilings, and windows; weatherization projects such as cutting holes in painted surfaces to install blown-in insulation or to gain access to attics and planing thresholds to install weather-stripping; and interim controls that disturb painted surfaces. “Renovation” does not include minor repair and maintenance activities



79



**What's the difference between abatement
and remodeling/renovation?**

INTENT



80

REGULATIONS



81

FEDERAL REGULATIONS PRIOR TO TITLE X

- Required lead inspections and lead abatement in all public and Indian housing. + ●
- Required lead hazards to be repaired in Section 8 housing when a lead-poisoned child was identified. ○
- Did not usually require private homeowners not receiving rental assistance to take any action regarding lead-based paint.



82

TITLE X: THE RESIDENTIAL LEAD-BASED PAINT HAZARD REDUCTION ACT OF 1992

FIVE (5) Main provisions of Title X:

1. Development of new HUD guidelines for dealing with lead-based paint in publicly-owned and private housing.
2. Real estate disclosure before selling or leasing a dwelling.
3. Certification of lead inspectors and lead abatement contractors.
4. Notification prior to renovation or remodeling.
5. Additional requirements for privately-owned housing receiving financial assistance from HUD.



83

ENFORCEMENT OF TITLE X

- Contractor and inspector certification and notification prior to renovation or remodeling can be delegated to states. If delegated to states, the states will do enforcement. If not, EPA will do enforcement.
- Real estate disclosure cannot be delegated to states. EPA will do enforcement.



84

HUD GUIDELINES

- Development of HUD guidelines were completed in 1995 and updated in July of 2012.
- These guidelines contain standards for conducting inspections, interim controls, and abatement in both public and private housing.
- These GUIDELINES do not have the force of law.
The only time inspectors are required to follow these guidelines is if their use is specified by a contract or special program.



85

STANDARDS FOR PROPERTIES RECEIVING HUD ASSISTANCE

- HUD has finalized rules that will require control of lead-based paint hazards in most properties receiving HUD assistance.
- Includes Section 8, Housing Rehab, etc



86

WHAT DO HUD RULES REQUIRE?

HOUSING REHABILITATION

- Property up to \$25,000: Lead hazards must be controlled (NOT abated). The people doing the work must have completed the 8-hour lead-safe work practices training.
- Property receives >\$25,000: Lead hazards must be ABATED. Work must be done by certified lead abatement contractors and lead abatement workers.

On all projects, dust clearance testing must be passed when the work is done. Either performed by a sampling tech or lead inspector



87

WHAT DO HUD RULES REQUIRE?

TENANT BASED RENTAL ASSISTANCE

- In pre-1978 dwellings where a child under the age of 6 years or a pregnant woman lives, all deteriorated paint must be repaired by someone who has completed the 8-hour lead-safe work practices course.
- Dust clearance testing must be passed when the work is done.



88

REAL ESTATE DISCLOSURE

- Became effective on December 6, 1996, for all sales and rentals of “target housing”.
- “Target housing” is any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age under the age of six years resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0-bedroom dwelling.
- Mobile Homes are included in the definition of “Target Housing”



89

REAL ESTATE DISCLOSURE

In SALES of target housing, the seller must:

- Fill out a standard form indicating whether they have specific knowledge of lead-based paint or lead-based paint hazards in the dwelling and provide this form to the buyer.
- Provide copies of any inspection reports to the buyer.
- Provide a copy of the EPA or a state-approved pamphlet to the buyer.
- Allow the buyer 10 days to get a lead inspection if the buyer wants an inspection.



90

REAL ESTATE DISCLOSURE

In RENTALS of target housing, the landlord must:

- Fill out a standard form indicating whether they have specific knowledge of lead-based paint or lead-based paint hazards in the dwelling and provide this form to the renter.
- Provide copies of any inspection reports to the renter.
- Provide a copy of the EPA or a state-approved pamphlet to the renter.



91

REAL ESTATE DISCLOSURE

In RENTALS of target housing:

Landlords can opt out of the disclosure if their dwelling has been inspected by a state-certified inspector and determined to be completely free of lead-based paint.

NOTE: If the dwelling contains lead-based paint that has been encapsulated or enclosed, it does not meet the definition of “free of lead-based paint.”



92

REAL ESTATE DISCLOSURE

Nothing in the real estate disclosure rule requires any property owner to inspect a dwelling for lead-based paint or to take any action to repair lead hazards.



An inspector or contractor who tells property owners that inspections or abatement are required by Title X as a means of securing business is in violation of Iowa's Consumer Fraud Act.



93

LOCAL REGULATIONS

- Most local regulations apply in the case of a lead-poisoned child.
- Regulations require lead hazards to be repaired. (Some currently use a more stringent definition of lead-based paint than what is in Title X and state regulations.)
- Regulations prohibit retaliation by landlords.
- Local agencies conduct inspections and order repairs.



94

REGULATIONS

LOCAL REGULATIONS

641 Chapter 68 of the Iowa Administrative Code.

Local boards of health can adopt this model regulation, which applies to elevated blood lead children.



95

REGULATIONS

FAIR HOUSING LAW

Unless housing is specially designated as elderly housing, landlord may NOT decide not to rent to families with small children to avoid repairing lead hazards or avoid liability.

Considered to be discrimination against families, which violates federal law.



96

PRE-RENOVATION NOTIFICATION

Iowa Administrative Code 641 Chapter 69

Effective June 1, 1999.

Applies to target housing and child-occupied facilities

In Iowa if a contractor will disturb more than 1 sqft of a painted surface in a pre-1978 residential property or child-occupied facility, a booklet must be provided prior to work beginning and get a signed acknowledgement from the property owner.

97

PRE-RENOVATION NOTIFICATION REQUIREMENTS

- Provide pamphlet to the owner.
- Obtain signed, dated acknowledgement from the owner.
- Notify each occupant in writing and make pamphlet available upon request.



98

PRE-RENOVATION NOTIFICATION

- Must obtain written acknowledgement from owner and known adult occupant.
- If written acknowledgement cannot be obtained, must certify in writing that pamphlet has been delivered and why acknowledgement could not be obtained.
- In lieu of delivering pamphlet and obtaining acknowledgement, may obtain certificate of mailing at least 7 days before starting work.



99

PRE-RENOVATION NOTIFICATION REQUIREMENTS

- If general nature, location, starting and ending dates, etc., change after initial notification, must provide revised notification.
- If certified inspector has made written determination that affected components are free of lead-based paint, then the project is exempt.



100

PRE-RENOVATION NOTIFICATION REQUIREMENTS

- Applies to work done in a single-family dwelling or inside a dwelling unit of multi-family housing.
- Includes work done in Child-occupied facilities
- No more than 60 days before starting work, provide pamphlet and notification to owner and known adult occupant.



101

PRE-RENOVATION NOTIFICATION REQUIREMENTS

- Does not include lead abatement performed by a certified lead abatement contractor.
- Modifying any existing structure or portion of a structure where painted surfaces are disturbed.
- Includes, but not limited to: removing walls, ceilings, and other painted components; window replacement; floor refinishing; and sanding, scraping, stripping, or otherwise removing paint.



102

PRE-RENOVATION NOTIFICATION

COMMON AREAS OF MULTI-FAMILY HOUSING

- Contractor must prepare, sign, and date statement describing steps taken to notify all occupants. Notification can be done by the owner on behalf of the contractor, but contractor is ultimately responsible.
- If nature or scope of work or dates for work change, must conduct additional notification.



103

EMERGENCY RENOVATION, REMODELING, AND REPAINTING

- Activities necessitated by non-routine failures of equipment.
- Must result from a sudden, unexpected event.
- Would present a safety or public health hazard or threaten equipment or property with significant damage if not immediately attended to.
- Provide the pamphlet to the owner of the property as soon as reasonably possible.
- Notify each owner and occupant in writing of the work and make the pamphlet available upon request.



104

PRE-RENOVATION NOTIFICATION RECORDKEEPING

Must keep records for three years, and must include:

- Address or location for work.
- Copies of signed, dated acknowledgements from owners and, for work done in dwelling units, occupants.
- Copies of signed, dated statements of notification for multi-family housing.
- Certifications of attempted delivery or mailing.
- Report from certified inspector for components free of lead-based paint.



105

PRE-RENOVATION NOTIFICATION

DIFFERENCES BETWEEN STATE OF IOWA AND FEDERAL REGULATIONS

Not EPA's intention, but federal regulation does not require notification of work in common areas for less than 4 dwelling units.

Federal regulations do not require notification if less than 2 square feet of paint disturbed per component.
Iowa regulations do not require notification if less than 1 square foot is disturbed (not per component).



106

INDIVIDUAL CERTIFICATION

107

CERTIFICATION OF LEAD PROFESSIONALS

- 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.
- You must be certified as a sampling technician to do visual assessments for rehab or other reasons or to do clearance testing after rehab, interim controls, or standard treatments.



108

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, including Iowa, have authorized programs.



109

IOWA CERTIFICATION REQUIREMENTS

Sampling technicians, inspector/risk assessors, EBL inspectors, lead abatement worker, lead abatement contractors, and lead safe renovators must be certified.

- Must meet education and experience requirements.
- Inspector/risk assessors and lead abatement contractors must pass a third party exam.
- Individuals must pay a \$180.00 fee every 3 year and take a refresher course every three years.



110

IOWA CERTIFICATION REQUIREMENTS

- Firms must be certified (free) and sign a statement that they will only use certified employees.
- Lead inspections, lead free inspections, risk assessments, lead hazards screens, clearance testing, reevaluations, and abatement **MUST** be conducted according to regulations.
- A person may be certified as both an inspector and a contractor, but must inform customers of the potential conflict of interest.
- Owner-occupants do not have to be certified if EBL child lives there.



111

IOWA CERTIFICATION REQUIREMENTS

COMPLIANCE WITH REGULATIONS

This course provides very limited overview of regulations.

Individuals are responsible for knowing and complying with all details of regulations.



112

IDENTIFYING LEAD-BASED PAINT HAZARDS

113

CHOOSING THE APPROPRIATE TYPE OF LEAD ASSESSMENT

To meet the needs of your customers and to avoid liability, you need to decide what type of assessment you are going to do before you ever start the work.

114

DIFFERENT TYPES OF LEAD ASSESSMENTS

1. Inspections to determine whether or not a rental property is free of lead-based paint for the purpose of opting out of the real estate disclosure rule.
2. Assessment to determine the presence of lead-based paint and/or lead-based paint hazards (lead inspections risk assessments, lead hazard screens). These may be done for information or to comply with government regulations.
3. Visual risk assessment to determine likely presence of lead-based paint hazards. This may also be done for information or to comply with government regulations.



115

DIFFERENT TYPES OF LEAD ASSESSMENTS

4. Inspections to determine the source of lead for a lead-poisoned child (EBL inspection).
5. Clearance testing after abatement, interim controls, paint stabilization, or rehabilitation.
6. Reevaluation.



116

WHO CAN CONDUCT DIFFERENT TYPES OF LEAD ASSESSMENTS?

INSPECTIONS TO DETERMINE THE SOURCE OF LEAD FOR A LEAD-POISONED CHILD

- By Iowa law, these inspections (EBL) must be done by the state or the or a designated local public health or housing official responsible for a particular geographic area.
- In the case of HUD rules requiring inspections in the case of an EBL child, inspection must still be done by state or designated local official.
- If you get calls from families who want inspections done because they have an EBL child, refer them to the responsible local official.



117

WHO CAN CONDUCT DIFFERENT TYPES OF LEAD ASSESSMENTS?

INSPECTIONS TO DETERMINE IF PROPERTY IS FREE OF LEAD-BASED PAINT

- Any private or public inspector can do these inspections if they are state-certified.
- Some public agencies will do these inspections as a means of generating income for their programs.



118

WHAT CERTIFICATION IS NEEDED TO DO VARIOUS TYPES OF LEAD ASSESSMENTS?

Lead inspector/risk assessor

- Lead inspections, lead free inspections, risk assessments, lead hazard screens, reevaluations, and all clearance testing.

Elevated blood lead (EBL) inspector/risk assessor

- Lead inspections, lead free inspections, risk assessments, lead hazard screens, reevaluations, all clearance testing, and EBL inspections.



119

WHAT CERTIFICATION IS NEEDED TO DO VARIOUS TYPES OF LEAD ASSESSMENTS?

Sampling Technician

- LIMITED paint testing (NOT composite paint testing and NOT in HUD-assisted housing)
- LIMITED dust testing and LIMITED soil testing (NOT in HUD-assisted housing)
- Clearance testing after interim controls, paint stabilization, and rehabilitation, as long as it does NOT involve random sampling.



120

SAMPLING METHODS

121

TOOLS USED FOR SAMPLING

1. Identification of lead-based paint.
2. Soil sampling.
3. Dust sampling.
4. Information collected from property owner.
5. Visual hazard assessment.

122

THREE METHODS OF TESTING

1. XRF analysis
2. Laboratory analysis
3. Chemical spot tests



123

XRF ANALYSIS

Reminder: An XRF analyzer is an instrument that determines lead concentration in milligrams per square centimeter (mg/cm^2) using the principle of x-ray fluorescence.

This is a non-destructive method of testing.



124

HOW THE XRF ANALYZER WORKS

- An XRF analyzer contains a sealed radioactive source (cobalt or cadmium).
- An XRF analyzer works by exposing a paint surface to radiation (usually gamma rays) emitted from the sealed source.
- When the gamma rays hit the paint surface, the lead atoms “fluoresce” or emit energy in the form of X-rays.
- This energy is of a frequency unique to lead and can be measured.
- When properly calibrated, the XRF analyzer gives the level of lead in the painted surface as a reading in milligrams per centimeter squared.



125

ADVANTAGES OF XRF TESTING

1. Speed - the results are available immediately.
2. Cost-efficiency - more cost efficient than laboratory analysis if a large number of samples need to be taken.
3. Non-destructive - paint surfaces do not need to be disturbed except to do substrate correction or to resolve inconclusive readings.



126

LABORATORY ANALYSIS

Laboratory analysis is a determination of lead content using approved laboratory methods.

This is a destructive method that requires paint to be removed from a surface and sent to a laboratory.

The use of laboratory analysis is usually limited to:

- Testing paint on surfaces that cannot be tested with an XRF.
- Resolving the lead level of paint that tests inconclusive with an XRF.



127

LABORATORY ANALYSIS

1. Must be done by “recognized” laboratory (EPA National Lead Laboratory Accreditation Program).
2. Accredited by one of two accrediting organizations.
3. Pass proficiency testing.
4. Violation of state and federal law to use other labs.
5. “Portable” Anodic Stripping Voltammetry instruments allowed ONLY if used by NLLAP-approved lab.



128

CHEMICAL SPOT TESTS

- Rely on a change in color to reveal presence of lead-based paint, either positive or negative for lead
- Marketed both to consumers and to contractors.
- Paint on a surface must be disturbed to give the best results.
- Iowa certified lead inspectors are prohibited from using or recommending the use of these test kits. They must provide exact amounts of lead



129

COLLECTION OF PAINT SAMPLES FOR LABORATORY ANALYSIS

130

COLLECTION OF PAINT SAMPLES

CHOOSING A LABORATORY

- Choose a laboratory that has been accredited by the EPA National Lead Laboratory Accreditation Program (NLLAP).
- Check with the laboratory to see if they will report results in milligrams/square centimeter if you provide the size of the area from which the sample was taken, or if they will only report in percent by weight.
- Find out if the laboratory has special sample containers and laboratory submittal forms that they want you to use.



131

COLLECTION OF PAINT SAMPLES

COLLECTION TECHNIQUE

- Try to collect the paint from an area that is at least 1 square inch (2.5 X 2.5 cm). Score the paint around the edge to get a “clean” sample. Record the actual size of the area from which the paint is collected.
- Put on a new pair of disposable gloves before starting to collect each sample to prevent cross-contamination of samples.
- Goal is to remove all layers of paint equally, but none of the substrate. To do this, hold a heat gun no closer than six inches from the surface. Heat until the paint starts to soften or blister. Use a razor-sharp scraper to remove the paint. Catch the paint sample on a clean piece of paper and transfer it to the laboratory sample collection container.

132

COLLECTION OF PAINT SAMPLES

PERSONAL PROTECTION

1. Inspectors should avoid all hand-to-mouth contact (eating, drinking, smoking, applying cosmetics) while collecting paint samples.
2. Wash your hands with soap and water or clean with a wipe after finishing paint sample collection.



133

COLLECTION OF PAINT SAMPLES

CLEAN UP & REPAIR

1. Clean up all settled dust using wipes.
2. Repair the painted surface.



134

COLLECTION OF SOIL SAMPLES

137

COLLECTION OF SOIL SAMPLES

WHAT IS BARE SOIL?

Soil where a child could have substantial soil contact while playing. Good grass cover is not “bare” soil. Areas covered with landscape mulch, perennials, etc., are not “bare” soil.

138

COLLECTION OF SOIL SAMPLES

COLLECTION OF SOIL SAMPLES FOR LABORATORY ANALYSIS

1. Use IDPH standard practices for field collection of soil samples.
2. Materials and supplies.
3. Collection technique.
4. Bare soil sampling procedures.



139

COLLECTION OF SOIL SAMPLES

Materials and Supplies

1. Core sampling device.
2. Disposable wipes.
3. 5" x 8" ziplock baggies (or collection bags provided by lab).
4. Non-sterilized, non-powdered disposable gloves.
5. Floor plan and property sketch.
6. Soil sample collection form.
7. Laboratory submittal form and sample labels.
8. Trash bag.



140

COLLECTION OF SOIL SAMPLES

Bare Soil Sampling Procedures

1. Not recommended (and probably not possible) when the ground is frozen.
2. Mark locations of soil samples on exterior site plan sketch.
3. Collect composite samples from perimeter of house and child's play area where bare soil is present.
4. Collect the top 1.5 cm or 5/8 inch of soil from each spot. Include paint chips IF they are on the spot you are sampling. Avoid grass, twigs, stones, and other debris.
5. Label bags and fill out laboratory forms.
6. Clean the core sampler with a disposable wipe after each composite sample is collected.



141

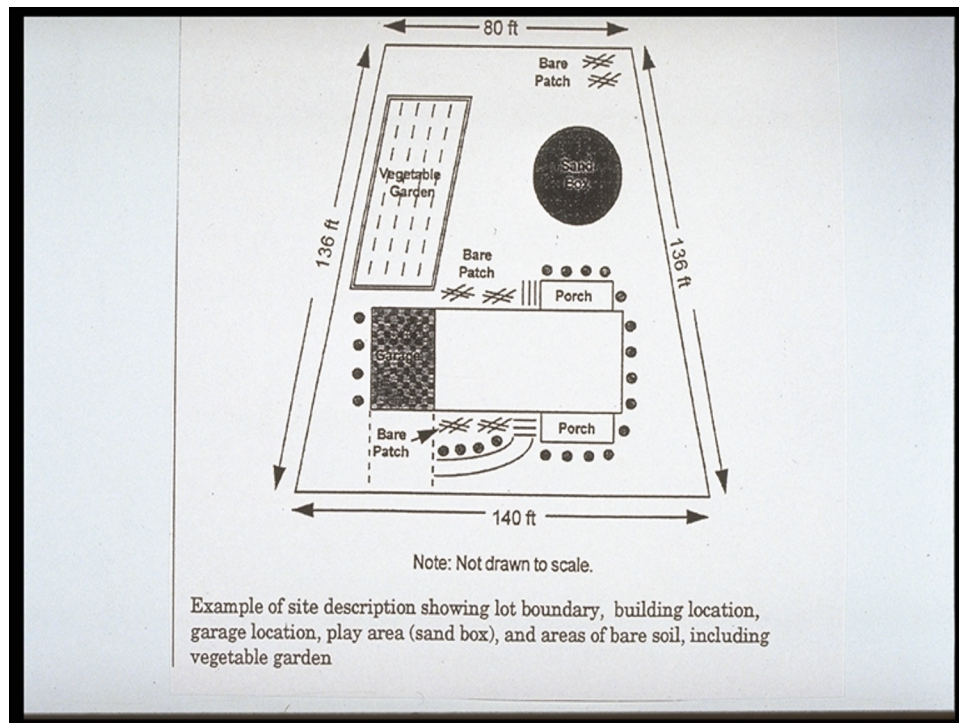
COLLECTION OF SOIL SAMPLES

Sampling Soil from Perimeter (Dripline) of House

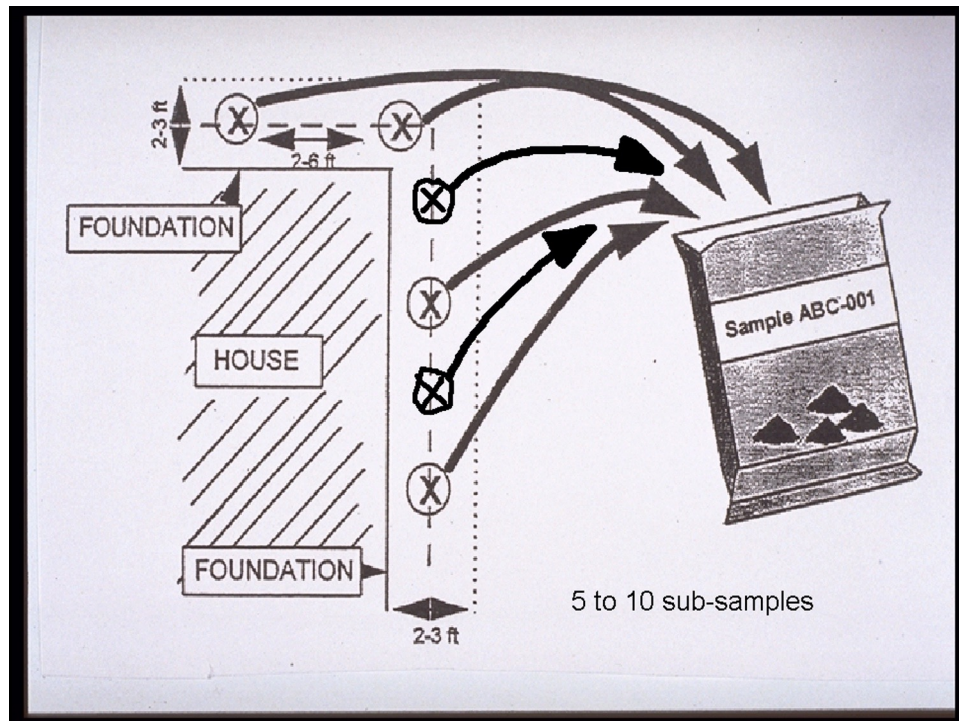
1. Take 5 to 10 sub-samples from around the building perimeter.
2. Collect from all sides of the house where bare soil is present.
3. Subsamples should be at least 2 feet apart.
4. Subsamples should be 2 feet away from the foundation (dripline area), unless the bare soil is closer than 2 feet to the foundation.



142



143



144

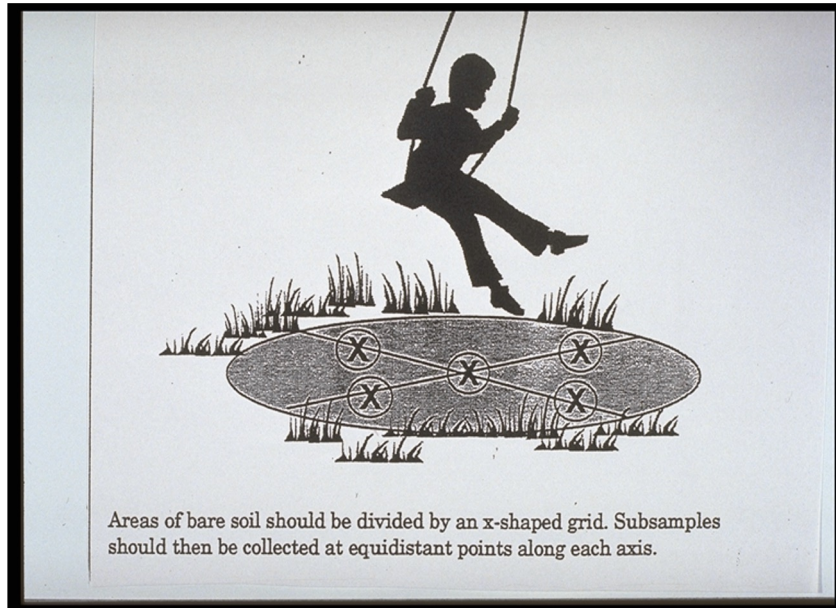
COLLECTION OF SOIL SAMPLES

Sampling Soil from Play Areas

1. Collect 5 to 10 subsamples along an "X"-shaped grid from bare soil in the child's principal play area.
2. Subsamples should be at least one foot apart.



145



146

INTERPRETATION OF SOIL LEAD LEVELS

Acceptable Levels of Lead in Bare Soil

1. Residential areas – 400 ppm.
2. Non-residential – 1,200 ppm.
3. At levels up to 5,000 use interim controls to reduce exposure:
 - A. Move children's play areas away from bare soil.
 - B. Establish vegetation such as grass or groundcover.
 - C. Plant flowers or shrubs.
 - D. Cover bare soil with mulch.
4. At levels greater than 5,000 ppm, remove or permanently cover soil.



147



148



149



150

COLLECTION OF WATER SAMPLES

151

COLLECTION OF WATER SAMPLES

COLLECTION OF WATER SAMPLES FOR LABORATORY ANALYSIS TO DETERMINE LEAD CONTENT

1. Collect a 250 milliliter first-draw sample from the kitchen faucet.
2. "First draw" means collecting the first 250 ml out of the faucet after the water has been unused for at least six hours.
Example: first thing in the morning, early evening if everyone has been gone all day, etc.
3. Use a special sample bottle provided by the laboratory.
4. You will probably need to leave the sample bottle with the occupants so they can take the sample themselves.



152

INTERPRETATION OF WATER LEAD LEVELS

INTERPRETATION OF WATER LEAD LEVELS

15 ppb - action level for public water supplies

20 ppb - action level for individual outlets

- Flushing is the best way to reduce lead levels in water.
- Removing solder or replacing faucets can actually make the lead level go up.



153

COLLECTION OF DUST SAMPLES

154

COLLECTION OF DUST SAMPLES

COLLECTION OF DUST SAMPLES FOR LABORATORY ANALYSIS TO DETERMINE LEAD CONTENT

1. Use IDPH standard practices for field collection of settled dust samples.
2. Materials and supplies needed.
3. Minimum and maximum samples areas.
4. Single surface wipe sampling procedure.
5. Composite wipe sampling.
6. Blank preparation.
7. Personal protection.



155

COLLECTION OF DUST SAMPLES

Materials and Supplies Needed

1. Disposable wipes.
2. Disposable gloves.
3. Collection forms.
4. Masking tape and measuring tape
5. Laboratory forms and labels for containers
6. Trash bag
7. Something to carry tubes in



156



157

COLLECTION OF DUST SAMPLES

Minimum & Maximum Sample Sizes

FLOORS:

The recommended area for a floor dust sample is 1.0 sq ft.

The minimum area for a floor dust sample is 0.5 sq ft.

The maximum area for a floor dust sample is 2.0 sq ft.

SILLS & TROUGHS:

The recommended area for a sill or trough sample is as much as possible (make a rectangle and do not include odd ends).

The minimum area for a trough or sill sample is 0.25 sq ft.

The Maximum area for a trough or sill sample is 2.0 sq ft.



158

COLLECTION OF DUST SAMPLES

Single Surface Wipe Sampling Procedure

1. Outline wipe area with masking tape or use a template.
 - A. Floors:
 - Do not walk on or touch surface to be wiped.
 - Apply adhesive tape to form a square or rectangle of about one square foot.
 - B. Confined Areas (window sills/troughs):
 - Apply two strips of adhesive tape across the sill to define wipe area, generally a rectangle.



159

COLLECTION OF DUST SAMPLES

2. Preliminary inspection of wipes.
 - A. Do NOT use if they have dried out or appear compromised in any way .
3. Partially unscrew cap on tube to make sure it can be opened.
4. Use new gloves for each sample.
5. First wipe pass (side to side).
 - A. Press firmly on wipe with palm and fingers.
 - B. Wipe side to side as many times as necessary to cover the area.



160

COLLECTION OF DUST SAMPLES

6. Second wipe pass (top to bottom).**
 - A. Fold wipe in half with contaminated side inside.
 - B. Place wipe in top left corner and cover entire area with top to bottom motions.

**Confined areas (window sills, etc.) May use side-to-side pass again.
7. Third wipe pass (corners).
 - A. Fold wipe in half again with contaminated side in
 - B. Use L-shaped pass on each corner.
8. Fold wipe again with second contaminated side inside and place into sample container without touching anything else.



161

COLLECTION OF DUST SAMPLES

9. Seal and label sample collection container.
10. Measure the surface area to the nearest 1/8 inch. Record area measurement on the sampling form.
11. Discard masking tape and gloves in trash bag.



162



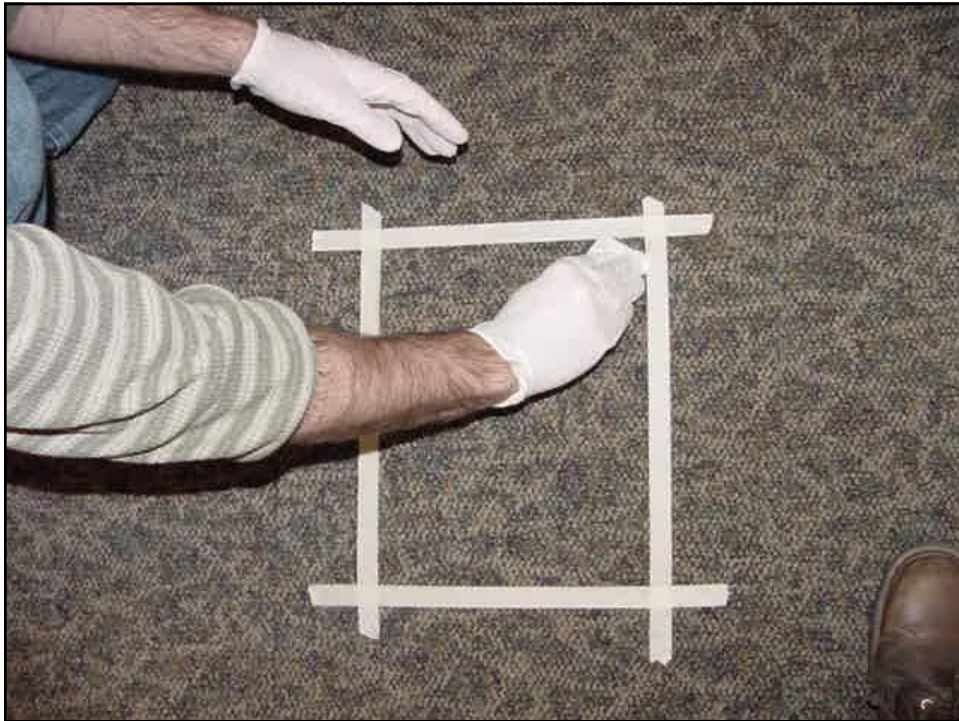
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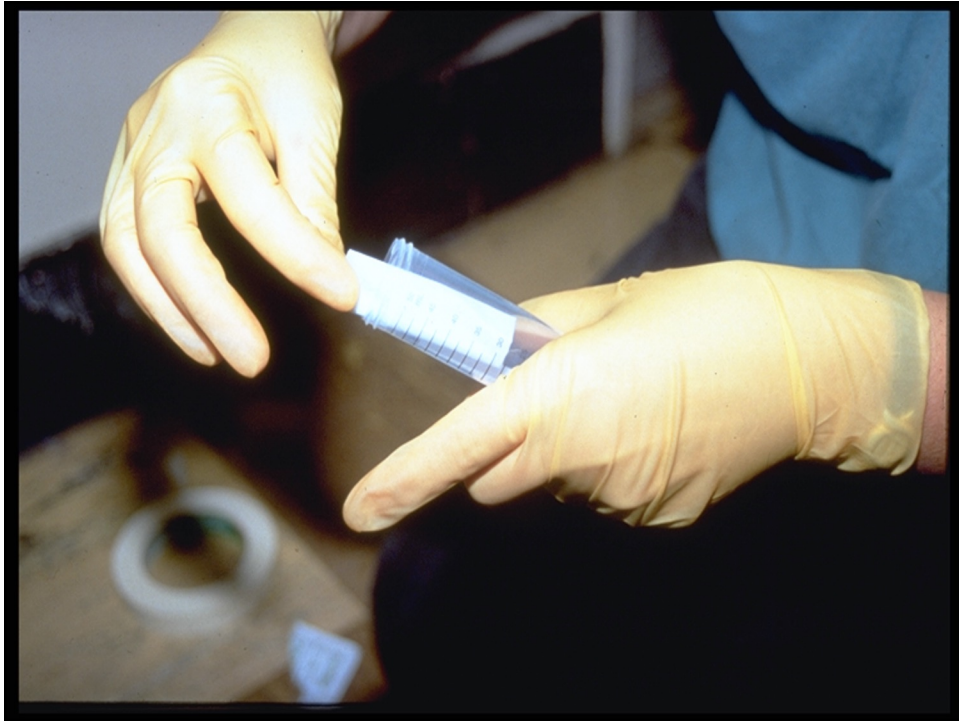
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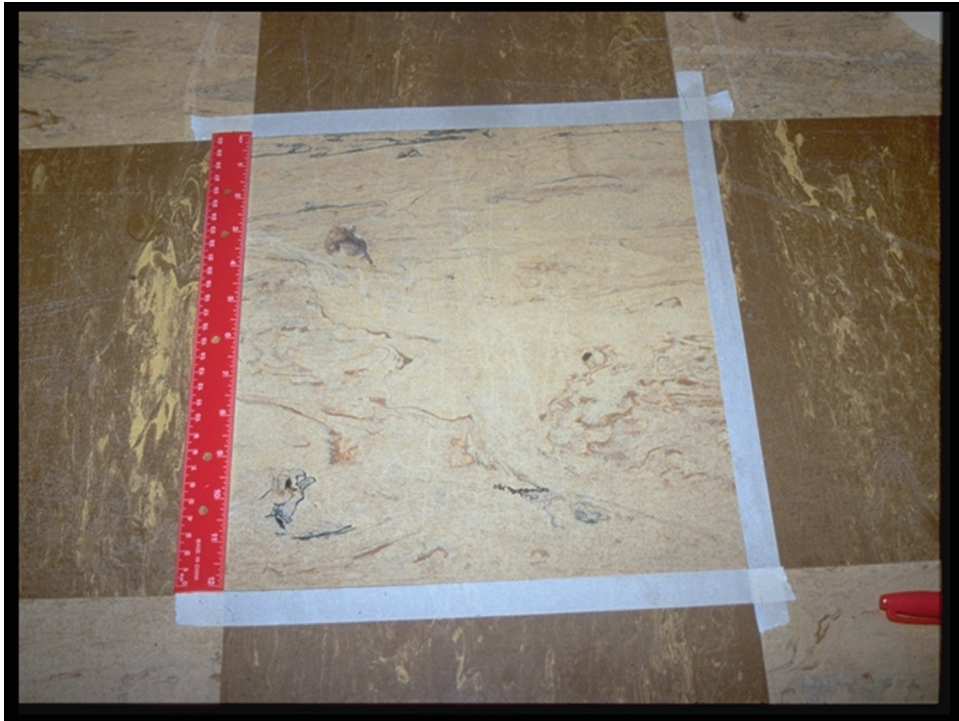
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166



167



168

 ACCURATE TESTING LLC <small>12950 HAGGERTY ROAD BELLEVILLE, MICHIGAN 48111 (734) 699-LABS (5227)</small>	SUBMITTING COMPANY <u>towa Lead safety</u> 4725 Merle Hay RD #212 Des Moines, IA 50322 <hr/> PO # _____		CONTACT INFORMATION <u>Jamie Papan</u> Office 515-331-1690 Fax 515-727-1440 Cell _____ Email - jamie@towlleadandsafety.com	
	PROJECT NUMBER _____	SAMPLE DATE _____	REQUESTED ANALYSIS LEAD SINGLE WIPE DUST () TURN AROUND TIME Paint Chip () SAME DAY () 48 HOUR 24 HOUR () STD ()	
	PROJECT ADDRESS _____			
	SAMPLE START TIME _____	SAMPLE END TIME _____		

LAB ID	SAMPLE ID	ROOM	S I T	AREA	CLIENT COMMENTS
					Please report samples in Micrograms/SQFT
					SAMPLE CONDITION SEALS INTACT Y N PRESERVATIVES Y N CONTAINERS LABELED Y N
					LAB REMARKS <div style="float: right; width: 150px; height: 100px; background-color: #cccccc; margin-top: 10px;"></div>

SAMPLES RELINGQUISHED BY	SAMPLES RECEIVED BY	TIME
		AM PM
		AM PM
		AM PM

85

COLLECTION OF DUST SAMPLES

Composite Wipe Sampling Procedure

1. Check with laboratory to ensure that they can analyze composite samples.
2. Set up all areas to be wiped before sampling. Areas in each room should be approximately the same size.
3. Use a separate wipe for each area. Place all wipes into the same collection tube (unless laboratory instructs differently).



173

COLLECTION OF DUST SAMPLES

Composite Wipe Sampling Procedure

4. Can use the same pair of gloves for all subsamples that will go into a composite sample.
5. Separate composite samples must be used for:
 - A. Carpeted and hard surface floors.
 - B. Floors, window sills, and window wells.
 - C. Separate dwellings.



174

COLLECTION OF DUST SAMPLES

Blank Preparation

1. Remove a wipe from container with a NEW glove.
Shake out wipe and fold as it would be after sample collection. Place in sample container without touching anything else.
2. Collect one blank for each dwelling unit sampled or for every 20 samples, whichever is less.
3. Collect one blank for every lot used. Record the lot number.



175

INTERPRETATION OF DUST LEAD LEVELS

For single surface samples the acceptable(Passing) or clearance levels of lead in dust are:

Uncarpeted floors - $<10 \mu\text{g}/\text{ft}^2$

Carpeted floors - $<10 \mu\text{g}/\text{ft}^2$

Interior windowsills - $<100 \mu\text{g}/\text{ft}^2$

Window wells (troughs) - $<400 \mu\text{g}/\text{ft}^2$

For composite samples, the above standards must be divided by half the number of subsamples in the composite sample before the lab results are interpreted.



176

INTERPRETATION OF DUST LEAD LEVELS

New Standards for Composite samples consisting of 4 sub-samples:

Floors	$<5 \mu\text{g}/\text{ft}^2 (10 \div 2)$
Window sills	$<50 \mu\text{g}/\text{ft}^2 (100 \div 2)$
Window troughs	$<200 \mu\text{g}/\text{ft}^2 (400 \div 2)$

New Standards for Composite samples consisting of 3 sub-samples:

Floors	$<7 \mu\text{g}/\text{ft}^2 (10 \div 1.5)$
Window sills	$<67 \mu\text{g}/\text{ft}^2 (100 \div 1.5)$
Window troughs	$<267 \mu\text{g}/\text{ft}^2 (400 \div 1.5)$

Note: The standard would not change for a composite sample consisting of 2 sub-samples, because it's divided by 1.



177

HAZARD ASSESSMENT

178

HAZARD ASSESSMENT

HAZARD ASSESSMENT

- Assessment of hazards is the **MOST IMPORTANT** element of inspecting homes built before 1960 where lead-based paint is likely to be present.
- Hazard assessment should include looking for conditions, such as excessive moisture, that are causing paint to deteriorate.



179

HAZARD ASSESSMENT

LEAD HAZARD

A source of lead in the child's environment that is accessible to the child and is causing or could potentially cause the child's blood lead level to rise.



180

HAZARD ASSESSMENT

WHEN IS LEAD-BASED PAINT A LEAD HAZARD?

1. If it is on an chewable, friction, or impact surface.

Chewable surface*: window sill.

Friction surface: window track.(Evidence of friction or elevated dust levels nearby)

Impact surface: edge of door or door frame. (Evidence of impact or deterioration)

*Differs from Federal definition. Federal definition says it has to have teeth marks to be considered a chewable surface.



181

HAZARD ASSESSMENT

WHEN IS LEAD-BASED PAINT A LEAD HAZARD?

2. On all other surfaces, if it is loose, chipping, cracking, peeling, flaking, chalking, or otherwise deteriorating.

Lead-based paint is always a hazard if it is deteriorated.



182

HAZARD ASSESSMENT

MOISTURE

- Liquid water and water vapor cause most premature paint coating failures.
- Lead-based paint forms a hard, non-permeable, inflexible coating. Water vapor forms when substrate gets wet and is warmed by sun.
- Water vapor pushes paint away from substrate.
- Repeated soaking and warming leads to paint failure.
- Ice crystals formed in winter also contribute to problem.
- Poor construction, ventilation, and maintenance allow moisture to be trapped.



183

INSPECTIONS

INSPECTIONS TO DETERMINE THE PRESENCE OF LEAD-BASED PAINT AND/OR LEAD-BASED PAINT HAZARDS

*Risk assessment.

*Lead hazard screen.

*Lead inspection.

Visual risk assessment.

Bypassing hazard identification.

* Done by certified inspector / risk assessor



184

INSPECTIONS

RISK ASSESSMENT

- Sample deteriorated paint.
- Dust and soil samples.
- Consider whether children are likely to live in property. If they do, which areas are mostly likely to be used by children?
- Federal scenario: Hire an inspector to identify lead-based paint. Then, hire a risk assessor to determine whether lead-based paint is a risk.
- Will not give a complete picture of all locations of lead-based paint in the dwelling.



185

INSPECTIONS

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.
- Not intended to be used in pre-1960 homes that are likely to have large amount of lead-based paint and hazards.
- Not likely to be a large demand for this type of assessment - we don't find that post-1960 homes are lead poisoning children.



186

INSPECTIONS

LEAD INSPECTION PROTOCOL

- Use to get a detailed description of lead-based paint and lead-based paint hazards. Not detailed enough to completely rule out the possibility of lead-based paint.
- Assessment/explanation of hazards is an important component of this type of inspection.
- Recommend using this approach in pre-1960 property.



187

INSPECTIONS

VISUAL ASSESSMENT OF PRE-1960 HOMES WHERE LEAD-BASED PAINT IS LIKELY TO BE PRESENT

Walking through a home to look for surfaces that are likely to be painted with lead-based paint and to look for peeling and chipping paint can be a low-cost alternative to a complete inspection.



188

INSPECTIONS

LEAD-BASED PAINT

- Used mostly in homes built before 1960.
- Used on interior wood surfaces: windows, baseboards, doors, etc.
- Used on some interior walls, primarily in kitchens and bathrooms.
- Used on exterior wood surfaces: siding, porches, windows, doors.
- Highest quality paints (“white lead paint”) had the highest amount of lead in them.



189

PERCENTAGE OF ALL PAINT THAT IS LEAD-BASED,
BY YEAR AND COMPONENT TYPE (HUD, 1996)

COMPONENT CATEGORY AND YEAR	INTERIOR	EXTERIOR
Walls/Ceiling/Floor		
1960-1979	5	28
1940-1959	15	45
Before 1940	11	80
Metal Components (Includes metal trim, window sills, molding, doors, air/heat vents, soffit and fascia, columns, railings).		
1960-1979	2	4
1940-1959	6	8
Before 1940	3	13
Non-Metal Components (Includes non-metal trim, window sills, molding, doors, air/heat vents, soffit and fascia, columns, and railings).		
1960-1979	4	15
1940-1959	9	39
Before 1940	47	78

Note that these percentages reflect the percent of time that lead-based paint is found on a component. They do NOT reflect the amount of lead in the paint during these different time periods.



190

INSPECTIONS

VISUAL ASSESSMENT OF PRE-1960 HOMES WHERE LEAD-BASED PAINT IS LIKELY TO BE PRESENT

- Assume that ALL painted surfaces have lead-based paint on them, and assess every painted surface.
- Look for lead-based paint hazards such as deteriorated paint, visible dust, and paint chips in soil.
- Advise family on hazards and maintenance.



191

INSPECTIONS

VISUAL ASSESSMENT OF PRE-1960 HOMES WHERE LEAD-BASED PAINT IS LIKELY TO BE PRESENT

1. When was the house built?
2. Which interior and exterior surfaces are painted?
3. Which surfaces have deteriorated paint or may be chewable (accessible), friction, or impact surfaces?
4. Look for visible house dust.
5. Evaluate soil.



192

INSPECTIONS

VISUAL ASSESSMENT OF PRE-1960 HOMES WHERE LEAD-BASED PAINT IS LIKELY TO BE PRESENT

Advice to the Family

1. Assume that peeling and chipping paint is lead-based paint. Use safe practices to complete repairs.
2. Keep house VERY clean!!!
3. Keep intact painted surfaces in good condition.
4. Repaint BEFORE you start to see peeling and chipping.
5. If remodeling or removing paint, assume it is lead-based paint and take the appropriate precautions.
6. Watch children's play areas in bare soil around the house.



193

INSPECTIONS

VISUAL ASSESSMENT OF PRE-1960 HOMES WHERE LEAD-BASED PAINT IS LIKELY TO BE PRESENT

Document Results

- Inspector should follow up with a report containing the advice given to the family. The inspector may want to take some pictures for the record in this case.
- Report is due 3 weeks after the assessment.



194

INSPECTIONS

BE CAREFUL OF WHAT YOUR REPORTS SAY!!

- You must be careful with what reports from visual risk assessments say.
- Unless you have tested a surface for lead-based paint, the report should NOT say or imply that any surface is NOT lead-based paint. This has been a problem in the past.
- Your assumption that all surfaces are painted with lead-based paint should be VERY clear in your report.



195

APPROACHES TO LEAD HAZARD CONTROL

196

APPROACHES TO LEAD HAZARD CONTROL

- Abatement
- Interim Controls
- Routine Maintenance



197

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT

Any measure or set of measures designed to permanently eliminate lead-based paint hazards.

Two Kinds of Abatement

1. Abatement of lead hazards
2. Abatement of lead-based paint



198

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT OF LEAD HAZARDS

Permanent measures that eliminate exposure only to those surfaces that are considered lead hazards.



199

APPROACHES TO LEAD HAZARD CONTROL

TOTAL ABATEMENT OF LEAD HAZARDS

Measures that eliminate exposure to ALL lead-based paint in a dwelling regardless of it's condition or location.



200

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT

EXAMPLES OF REGULATIONS REQUIRING ABATEMENT

- Abatement of all lead-based paint required during publicly-owned housing rehab.
- Title X requires lead hazard abatement when more than \$25,000 of HUD rehab funds are spent on a unit.



201

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT

ABATEMENT HAS TWO PRINCIPAL ADVANTAGES

1. Provides a long term solution (expected to last at least 20 years).
2. Little (if any) monitoring or reevaluation is needed.



202

APPROACHES TO LEAD HAZARD CONTROL

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.



203

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT STRATEGIES

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



204

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT STRATEGIES

BUILDING COMPONENT REPLACEMENT

Removal of doors, windows, trims, and other building items that contain lead-based paint and replacing them with lead-free components.



205

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT STRATEGIES

ENCAPSULATION

Process that makes lead-based paint inaccessible by providing a barrier between lead-based paint and environment.



206

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT STRATEGIES

PAINT REMOVAL

1. Most hazardous method of abatement.
2. May be best method for limited areas and for historic preservation.



207

LEAD HAZARD CONTROLS: PAINT REMOVAL

DEFINITION OF PAINT REMOVAL

Separation of paint from substrate using heat guns, chemicals, or certain contained abrasive measures, either onsite or offsite.



208

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHODS

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



209

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHOD

OPEN FLAME BURNING OR TORCHING AND
HEAT GUNS ABOVE 1100°F.

1. Heating lead-based paint above 1,100 °F is strictly prohibited.
2. Must remove lead-based paint before using cutting torches.



210

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHOD

MECHANICAL SANDING, GRINDING, OR SCRAPING WITHOUT HEPA EXHAUST TOOL

- Prohibited because large amount of dust is generated.
- Makes cleanup and clearance very difficult.



211

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHOD

UNCONTAINED HYDROBLASTING OR HIGH PRESSURE WASHING

1. Almost impossible to contain all water and paint chips.
2. Puts water into substrate that will cause paint to peel.



212

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHOD

ABRASIVE BLASTING OR SANDBLASTING

- Widespread dust and paint chip contamination.
- Much more difficult to clean up and pass clearance.
- Prohibited regardless of containment.



213

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHOD

DRY SCRAPING

- Prohibited because large amount of dust is generated.
 - Makes cleanup and clearance very difficult.
- Allowed only near electrical outlets or with heat gun.



214

LEAD HAZARD CONTROLS: PAINT REMOVAL

PROHIBITED REMOVAL METHOD

CHEMICAL STRIPPERS CONTAINING METHYLENE CHLORIDE

- Widely available, but not recommended.
(Prohibited in HUD-assisted housing unless adequate ventilation.)
- Methylene chloride can cause liver and kidney damage, carbon monoxide poisoning, and is suspected to cause cancer.
- Air-purifying respirators do not provide adequate protection.



215

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED METHODS

1. Heat guns
2. HEPA mechanical removal
3. Chemical removal
4. Wet sanding or wet scraping



216

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED REMOVAL METHOD

HEAT GUNS

- Operate heat guns below 1,100 °F.
- Be careful around flammable materials.
- OSHA requires fully charged ABC-type 20 pound fire extinguisher within 100 feet of work area.
- Stay 3 - 6 inches away from painted surface.



217

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED REMOVAL METHOD

HEAT GUNS

- Use heat gun only until paint begins to blister.
- Immediately remove heat and scrape paint from surface.
- Does not produce fumes, but still produces airborne lead.
- Need well-ventilated space - organic materials in paint will be vaporized.
- Usually damages drywall and plaster.



218

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED REMOVAL METHOD

HEPA MECHANICAL REMOVAL METHODS

1. HEPA sanding.
2. HEPA vacuum blasting.
3. HEPA needle gun.



219

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED REMOVAL METHOD

HEPA SANDERS

1. Not completely effective. Respirators still needed.
2. Workers easily fatigued holding tool flush with surface.



220

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED REMOVAL METHOD

CHEMICAL REMOVAL METHODS

- May produce less lead dust than other methods, if done properly.
- Can be very costly.
- Potential worker injury from chemical burns and spills/splashes.
- Need proper ventilation.
- May need paper or cardboard on floors in addition to plastic.



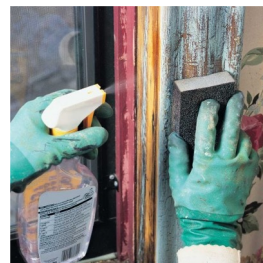
221

LEAD HAZARD CONTROLS: PAINT REMOVAL

RECOMMENDED REMOVAL METHOD

WET SANDING AND SCRAPING

- Appropriate anywhere except around electrical outlets.
- Mist surface before sanding or scraping.
- Used to remove deteriorated paint.
- Probably can't remove enough paint to qualify as "abatement."
- Consider using two people: one to keep surface wet and a second one to scrape.



222

APPROACHES TO LEAD HAZARD CONTROL

ABATEMENT, INTERIM CONTROLS, RRP

WHAT'S THE DIFFERENCE?

If activity is not directly intended to reduce or eliminate lead hazards, it is not considered abatement or interim controls.



223

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

A set of measures designed to temporarily reduce human exposure or likely exposure to lead-based paint hazards.



224

LEAD HAZARD CONTROLS: INTERIM CONTROLS

INTERIM CONTROLS INCLUDE:

- Repairing all rotted or defective substrates.
- Paint film stabilization.
- Treating accessible, friction, and impact surfaces.
- Treating bare soil with excessive levels of lead.
- Dust removal and control.
- Educating residents and workers regarding lead poisoning.
- Reevaluation and maintenance.



225

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

WHEN ARE INTERIM CONTROLS APPROPRIATE?

1. Allowed by regulation.
2. Most surfaces are intact and structurally sound.
3. Lead exposure comes primarily from deteriorating paint and excessive levels of lead in dust or soil.
4. If housing is slated for demolition or extensive rehab within a few years.



226

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

WHEN ARE INTERIM CONTROLS NOT APPROPRIATE?

1. Substantial structural defects.
2. Major components are seriously deteriorated or subject to moisture.
3. Abatement is required by regulations.



227

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

METHODS OF INTERIM CONTROLS

1. Paint film stabilization.
2. Treatment of chewable, impact, and friction surfaces.
3. Dust removal and control.
4. Soil interim controls.



228

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

REPAIR SUBSTRATE BEFORE STABILIZING PAINT FILM

- Dry rotted or rusty structural, siding, or railing components.
- Wall/ceiling plaster that is loose from underlying lath.
- Missing hardware (e.g. door hinges, knobs).
- Loose siding and trim.
- Loose wallpaper.



229

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

WHEN IS PAINT FILM STABILIZATION NOT APPROPRIATE?

- Needed repairs not possible.
- High probability for future physical damage.
- Children's play equipment.
- Structurally unsound wall surfaces.
- Walls with layer of wallpaper over or under lead-based paint.
- Weep holes in storm windows not cleared.



230

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

LEAD HAZARD CONTROLS MEASURES FOR CHEWABLE,
FRICTION, AND IMPACT SURFACES

Actually a combination of interim controls and
abatement.



231

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

WINDOWS

- Largest source of leaded dust and chips.
- Most complex to treat.
- Window paint deteriorates more rapidly than other painted surfaces.
- Most significant friction surfaces.



232



233



234

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

WINDOWS: INTERIM CONTROLS

1. Mist, score, pry off, and dispose of stop bead holding in lower sash.
2. Remove lower sash.
3. Mist jamb, parting bead, sash, window trough, and peeling trim.
4. Scrape away loose, flaking paint.
5. HEPA vacuum all surfaces, especially window trough.



235

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

WINDOWS

6. If trough is badly weathered, cap with aluminum coil stock by back caulking and nailing in place.
7. Thoroughly clean all surfaces.
8. Repair weight and pulley system.
9. Reinstall sash with new stop bead.
10. Wet scrape any additional loose paint and HEPA vacuum once more.
11. Prime and paint new stop bead.



236

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

DOORS

- Door frames become misaligned from settlement.
- Multiple layers of paint cause doors to rub, stick, or even cause paint to chip off.



237

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

DOORS

- If door is heavily painted; mist, score, and pry off door stop.
- Prepare for disposal.
- Remove door from hinges. Take door outside to plane friction surfaces.
- Install a new doorstop
- Prime and repaint new stop and planed areas.
- Rehang the door.



238

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

INTERIM CONTROL OPTIONS FOR STAIRS

1. Install rubber tread guards over entire width of stairs.
2. Cover risers with plywood sheeting.
3. Cover treads and risers with carpeting.
Install securely to prevent additional abrasion.
4. Installation of hard, cleanable surfaces (e.g. tile)
is preferred.



239

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

BASEBOARDS AND OUTSIDE WALL CORNERS

- Replace shoe molding to prevent impacts on baseboard.
Back caulk the new shoe molding.
- Cover outside corners of walls with wood or plastic corner guards.



240

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

DRAWERS AND CABINETS

Can be a problem if doors and drawer facings
do not fit properly



241

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

PORCHES, DECKS, & INTERIOR FLOORS

- Minimum treatment: stabilize paint and cover with polyurethane or high-quality paint.
- Covering must be smooth enough for routine cleaning.
- Abatement is recommended.



242

APPROACHES TO LEAD HAZARD CONTROL

DUST REMOVAL AND CONTROL



243

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - DUST

CREATING CLEANABLE SURFACES

- Floors with smooth, intact surfaces can be effectively cleaned.
- Repair floors in poor condition before cleaning.
- Machine wash small rugs and mats.
- Large rugs or carpeting in fair to good condition can be cleaned.
- Consider discarding rugs, carpets, and mats at the end of useful life.



244

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - DUST

IS DUST REMOVAL ALONE ADEQUATE?

- Yes, if surfaces are cleanable and there is no deteriorated lead-based paint present.
- No, if substrates are too deteriorated to clean or if there is deteriorated lead-based paint present.



245

APPROACHES TO LEAD HAZARD CONTROL

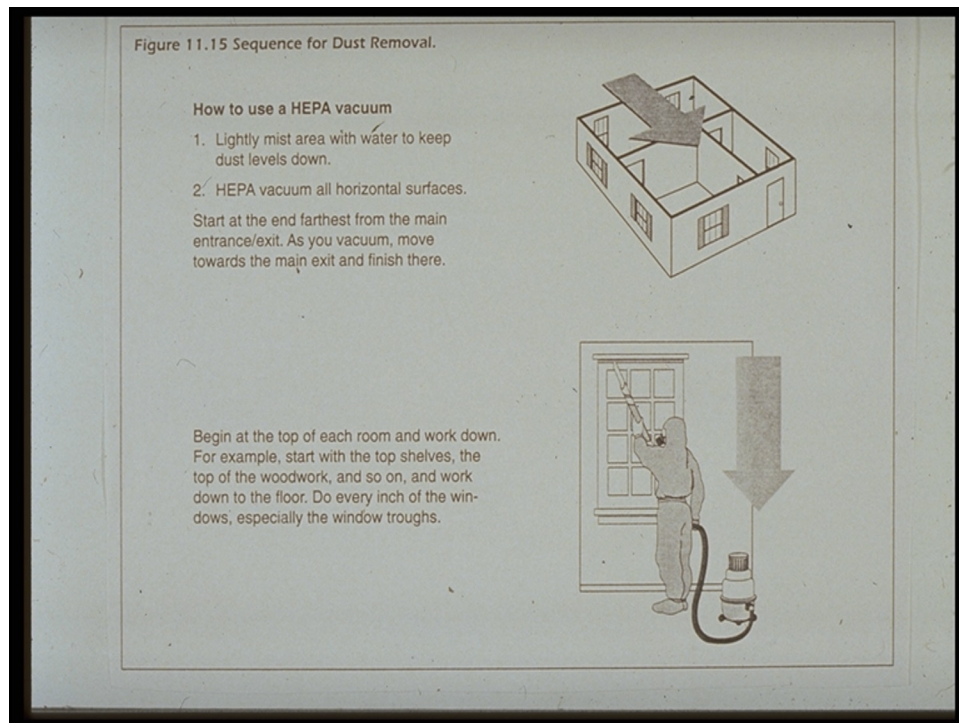
INTERIM CONTROLS - DUST

CLEANING HARD SURFACES for Dust Removal

1. HEPA vacuum followed by wet wash.
2. Vacuum and clean from top to bottom.
3. Work from clean areas to dirty areas.



246



247

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - DUST

REMOVAL OR CLEANING OF CARPETED FLOORS

- Embedded dust is hard to remove.
- Procedures described here have shown some success.
- No method will remove all lead dust from carpets.

248

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - DUST

OPTIONS FOR CARPET CLEANING AND REMOVAL

- Clean onsite.
- Remove for disposal.
- Remove for professional offsite cleaning.

May be cheaper to replace carpets that are highly contaminated or in poor condition than to clean them.



249

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - DUST

FORCED AIR SYSTEMS AND DROP CEILINGS

- Dust in these areas is probably greater hazard to maintenance or renovation workers accessing them than to residents.
- "Cleaning" these areas as part of a lead hazard control project is not usually necessary.



250

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS FOR LEAD-CONTAMINATED SOIL



251

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - SOIL

INTERIM CONTROLS FOR LEAD-CONTAMINATED SOIL

- Interim control methods for soil.
- Controls to minimize migration of soil into dwellings.
- Monitoring and reevaluating soil interim controls.



252

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - SOIL

Soil Lead Levels up to 5,000 ppm

- Soil surface cover.
- Land use controls.
- Drainage and dust control.



253

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS – SURFACE COVER

SURFACE COVER

- Grass (seed or sod).
- Other live ground cover (shrubs, ground cover, etc.)
- Mulch.
- Artificial turf.



254

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS – GRASS & GROUND COVERS

GRASS AND OTHER LIVE GROUND COVERS

- Success depends on proper planning, regular maintenance, and traffic control.
- Grass unlikely to succeed in high-traffic areas.
- Grass and ground covers should succeed if use is limited.
- Consult landscape or lawn care professional to choose proper grass or ground cover.



255

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - MULCH

MULCH

- Should be at least six inches thick.
- Ensure that mulch is low in lead.
- Follow Consumer Product Safety Commission recommendations for mulch near play equipment.



256

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS – LAND USE

LAND USE CONTROLS

- Fencing.
- Decking.
- Warning signs.
- Create alternative play area.
- Move play area away from bare soil.
- Educational efforts.
- Planting thorny or dense bushes.



257

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS – DRAINAGE & DUST

DRAINAGE AND DUST CONTROLS

1. Direct water flow away from contaminated areas.
2. Control foot traffic on bare soil.



258

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS - SOIL

CONTROLS TO MINIMIZE MIGRATION OF SOIL LEAD INTO DWELLINGS

- Doormats.
- Take off shoes at the door.



259

Lead Tracking

Lead dust can be transported from one area to another on shoes.

Tracking lead dust from one area to another is a big problem on lead hazard control jobs. Lead dust can be tracked on shoes from the work area to the outside. Sometimes lead dust from the outside soil is tracked into the work area. Lead dust from a porch or nonwork area can get tracked into a cleaned area. When this happens, the whole area must be cleaned.



260



261

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS -SOIL

SOIL ABATEMENT

Permanent measures such as removing soil or covering with concrete.



262

APPROACHES TO LEAD HAZARD CONTROL

COMBINATION OF CONTROLS

Most effective method of making unit “lead-safe” is often a combination of interim controls and abatement.



263

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

MAINTENANCE, MONITORING, AND REEVALUATION

- Success of interim controls depends on effectiveness over time.
- Must be monitored and maintained to remain effective.
- Repair failures of interim controls immediately.
- Regular cleaning needed to maintain low dust levels.
- Qualified individual should reevaluate periodically.



264

APPROACHES TO LEAD HAZARD CONTROL

INTERIM CONTROLS

MONITORING INTERIM CONTROLS

- Interim guidelines are not a one-time, long term repair of lead hazards.
- Owner must monitor lead-based paint and quickly repair hazards.



265

APPROACHES TO LEAD HAZARD CONTROL

ROUTINE MAINTENANCE

HOW DOES ROUTINE MAINTENANCE DIFFER FROM LEAD HAZARD CONTROL EFFORTS?

- Purpose of maintenance: to keep buildings in good repair.
- Purpose of lead hazard control: to prevent lead poisoning.
- Purposes are different, but not contradictory.



266

LEAD HAZARD CONTROLS

RENOVATION, REMODELING, AND REPAINTING

Any activity that could disturb painted surfaces other
than actual abatement or interim control.



267

LEAD DUST CLEANUP & CLEARANCE

268

LEAD DUST CLEANUP & CLEARANCE

EPA AND STATE OF IOWA LEAD DUST CLEARANCE STANDARDS

- $\geq 10 \mu\text{g}/\text{ft}^2$ on floors
- $\geq 100 \mu\text{g}/\text{ft}^2$ on interior window sills
- $\geq 400 \mu\text{g}/\text{ft}^2$ on window troughs



269

LEAD DUST CLEANUP & CLEARANCE

CLEARANCE STANDARDS

1. Not possible to remove ALL lead dust from a dwelling. However, it is possible to lower dust lead level to safe level.
2. Clearance levels are safety measures to insure that lead dust is not a greater hazard after work is complete.
3. Cleaned areas cannot be occupied until clearance standards are met.



270

LEAD DUST CLEANUP & CLEARANCE

CLEANING METHODS

- Cleaning methods described in this section are effective in meeting clearance standards.
- However, other methods may be used if proven safe and effective.



271

LEAD DUST CLEANUP & CLEARANCE

FINAL CLEANING PROCEDURES

Wait at least one hour after finishing work to allow dust to settle.



272

LEAD DUST CLEANUP & CLEARANCE

HEPA / WET WASH / HEPA CYCLE

1. HEPA vac to remove as much dust and debris as possible.
2. Wet wash to further dislodge dust from surfaces.
3. HEPA vac after drying to remove remaining particles.



273

LEAD DUST CLEANUP & CLEARANCE

HIGH-EFFICIENCY PARTICULATE AIR (HEPA) VACUUMS

- Capable of picking up extremely small particles.
- Do not exhaust small particles back into the room.



274

LEAD DUST CLEANUP & CLEARANCE

HEPA VACUUM ALL ROOMS UNLESS:

- Room had no lead hazards and was properly separated from work areas before work began.
- Room was not entered during work.



275

LEAD DUST CLEANUP & CLEARANCE

HEPA VACUUMING PROCEDURES

1. Begin on ceilings and end on the floors.
2. Do not pass through rooms already cleaned.
3. Clean dwellings' entryway last.



276

LEAD DUST CLEANUP & CLEARANCE

WET DETERGENT WASH

- Detergents with a high-phosphate content (ex., TSP) were thought to be best detergent .
- Recent EPA study indicates that other high-quality detergents are just as effective.



277

LEAD DUST CLEANUP & CLEARANCE

CURRENT IDPH AND EPA ECOMMENDATION ON CHOICE OF DETERGENT

1. Use any available detergent according to manufacturer's directions.
2. Put plenty of physical effort in cleaning.
3. Due to harshness of chemical and environmental concerns, TSP is probably least favored cleaning agent.



278

LEAD DUST CLEANUP & CLEARANCE

PRELIMINARY VISUAL EXAMINATION BY CERTIFIED INSPECTOR

1. Done after final cleaning, but before surfaces are painted or sealed.
2. Visually evaluate the entire work area to ensure that all interim control and abatement work is complete.
3. Ensure that there is no visible dust or debris (“white glove test”).



279

LEAD DUST CLEANUP & CLEARANCE

SURFACE PAINTING / SEALING

1. Prime and repaint walls, ceilings, and woodwork.
2. Coat floors with appropriate sealant or cover with vinyl, etc., before clearance testing.



280

LEAD DUST CLEANUP & CLEARANCE

CLEARANCE FAILURE

Additional cleaning and retesting is required if clearance fails. All areas or components represented by a failed sample must be recleaned. Additional clearance samples must then be taken from the recleaned areas.

Take care so that areas passing clearance testing are not contaminated from recleaning



281

LEAD DUST CLEANUP & CLEARANCE

INITIAL CLEARANCE TEST FAILURE RATES

Likelihood of passing dust-clearance tests depends on :

1. Chosen intervention strategy.
2. Methods of interim controls or abatement.
3. Care exercised by the contractor.

Failure rates are higher for chemical stripping and hand-scraping than for replacement and encapsulation/enclosure.



282

LEAD DUST CLEANUP & CLEARANCE

BYPASSING HAZARD IDENTIFICATION

- Bypass an inspection and/or risk assessment and instead use funds to control suspected/assumed hazards (similar to assuming lead-based paint and applying standard treatments under HUD regulations).
- Inspector/Risk assessors may be asked to verify that no hazards remain after work has been completed and clearance passed.



283

LEAD SAFE RENOVATOR BASICS

284

THE RRP

EPA RULE that addresses activities that disturb lead-based paint in target housing and child-occupied facilities.

- Effective on April 22, 2010.
- It requires:
 - Training providers must be approved.
 - Renovators must be trained and supervised.
 - Renovators and firms must be certified.
 - Lead-safe work practices must be used during renovations.



285

THE RRP / LEAD SAFE RENOVATOR (LSR) RULE

- Allows state authorization by the EPA.
EPA may authorize states, territories and tribes to enforce this rule.
- *Iowa is an authorized state so the lead-safe renovator training emphasizes Iowa's rules.*



286

THE LSR RULE EXCLUSIONS

- Renovation activities where affected components do not contain lead-based paint.
- Emergency renovations (requires still cleanup and cleaning verification or dust lead clearance).
- Minor repair and maintenance activities. *Note: This exclusion does not apply to window replacement, demolition, or activities involving prohibited practices.*
- Renovations performed by homeowners in homes that they own and where they or immediate relatives live.



287

MINOR REPAIR & MAINTENANCE

Iowa Administrative Code 641, Chapter 70.2(135) Definitions

“Minor repair and maintenance activities” means activities, including minor heating, ventilation or air-conditioning work, electrical work, and plumbing, that disrupt less than the minimum areas of a painted surface established in this definition where **none of the work practices prohibited or restricted by this chapter are used and where the work does not involve window replacement or demolition of painted surface areas.**



288

MINOR REPAIR & MAINTENANCE cont'd

When painted components or portions of painted components are removed, the entire surface area removed is the amount of painted surface disturbed. Projects, other than emergency renovation, performed in the same room within the same 30 days must be considered the same project for the purpose of determining whether the project is a minor repair and maintenance activity. Renovations performed in response to an elevated blood lead (EBL) inspection are not considered minor repair and maintenance activities.



289

MINOR REPAIR & MAINTENANCE cont'd

The minimum area for minor repair and maintenance activities is:

- Less than 1.0 square foot of an interior painted or finished wood surface per renovation;
- Less than 6.0 square feet of a painted or finished drywall or plaster surface per room; or
- Less than 20.0 square feet of an exterior painted or finished surface per renovation.

Projects performed pursuant to (HUD) 24 CFR Part 35 shall comply with the de minimis levels in 24 CFR 35.1350 if these de minimis levels are more restrictive than the minimum areas of a painted surface established in this definition.



290

EMERGENCY RENOVATION

“Emergency renovation” means renovation, remodeling, or repainting activities necessitated by non-routine failures of equipment or of a structure that were not planned but resulted from a sudden, unexpected event that if not immediately attended to presents a safety or public health hazard or threatens equipment or property with significant damage.

“Emergency renovation” includes interim controls, renovation, remodeling, or repainting activities that are conducted in response to an elevated blood lead (EBL) inspection.



291

EMERGENCY RENOVATIONS REQUIRED DUE TO ELEVATED BLOOD LEAD (EBL) INSPECTION

- Initially exempt from certification requirements.
- Must follow work practice standards in Chapter 70.
- Individuals who perform emergency renovations in response to EBL inspection must become certified as lead-safe renovator, lead abatement contractor, or lead abatement worker within six months from the date of EBL inspection report.
- Must pass clearance testing performed by a certified elevated blood lead (EBL) inspector/risk assessor.



292

THE LSR RULE: Firm Responsibilities

- Ensure overall compliance with the RRP Rule.
- Assign a certified lead-safe renovator to each job.
- Ensure that all renovation personnel are certified lead-safe renovators or have received on-the-job training by a certified lead-safe renovator.
- Meet pre-renovation education requirements.
- Meet recordkeeping requirements.



293

LSR RULE: Individual Certified Lead-Safe Renovator (LSR) Responsibilities

- At all other times during renovation, the certified lead-safe renovator must be available by telephone, pager, or answering service and be able to be onsite within 2 hours.
- Maintain the containment to keep dust and debris within the work area.
- Implement the cleaning verification procedure.
- Prepare and maintain required records.



294

LSR RULE: Individual Certified Lead-Safe Renovator Responsibilities

- Perform work and direct lead-safe work practices.
- Provide on-the-job training to non-certified workers.
- Keep a copy of the initial and/or refresher training certificates onsite.
- Use EPA-recognized test kits to identify lead-based paint.
- The certified lead-safe renovator **MUST** be on site during all **preparation work** and **clean up activities**.



295

WASTE MANAGEMENT

WASTE MANAGEMENT

- Governed by federal RCRA (Resource Conservation and Recovery Act).
- In Iowa, this is administered by EPA Region VII.

WASTE CATEGORIES

1. Paint chips, soil, and building components.
2. Waste water from cleaning.



296

WASTE MANAGEMENT

PAINT CHIPS, SOIL, AND BUILDING COMPONENTS

- Exempted from hazardous waste regulations under the RCRA household waste exclusion. (1995 & 2000 EPA Interpretations)
- Contractor must document that waste came households rather than commercial buildings or superstructures. If lead in soil is from source other than paint chips, must treat as hazardous waste.
- In Iowa, components may be disposed of at a solid waste landfill or at a construction and demolition landfill. (Other states' regulations may be different)



297

WASTE MANAGEMENT

WASTE WATER

(Example: from cleaning after hazard control).

- Contact the local waste water treatment facility to see if special treatment is needed.
- Pour wastewater down toilet after any required pretreatment.
- NEVER dispose of waste water by pouring onto ground or pavement.



298

CLEARANCE TESTING

299

CLEARANCE INSPECTIONS

CLEARANCE TESTING NEEDED TO DETERMINE IF:

1. The work was actually completed as specified.
2. To detect presence of excessive lead dust.
3. To ensure all treated surfaces are sealed.

If clearance results pass, contractor can conclude job is complete and area is safe for unprotected workers and for residents and young children.



300

CLEARANCE INSPECTIONS

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 (windowsills, baseboards, and trim.)



301

CLEARANCE INSPECTIONS

WHEN IS CLEARANCE TESTING REQUIRED?

- Probably required for interim controls and other work where specs cite the HUD Guidelines.
- Any other time required by the contract between property owner and contractor.



302

CLEARANCE INSPECTIONS

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 technician (Iowa regulations).



303

CLEARANCE INSPECTIONS

WHO CAN DO CLEARANCE INSPECTIONS?

- HUD Guidelines state that clearance inspector should be paid, employed, or compensated by the property owner, NOT the contractor.
- New HUD regulations and Iowa regulations allow the "designated party" (HUD grantee) to perform both lead hazard controls and clearance, so long as these are done by a different person.
- This option is not available for private companies. In that case, the lead hazard controls and clearance must be done by different companies.



304

CLEARANCE INSPECTIONS

VISUAL EXAMINATION

- Visual examination done before environmental sampling to determine if work was done properly.
- Need copy of inspection or risk assessment.
- Need scope of work or contract specs.



305

CLEARANCE INSPECTIONS

VISUAL EXAMINATION

Soil Treatments and Exterior Work

- If soil covering is chosen method, verify that all bare soil areas are covered.
- If work is done on the exterior, verify that the work is complete and that there are no paint chips in areas of bare soil.



306

CLEARANCE INSPECTIONS

VISUAL EXAMINATION

Interim Controls

1. Confirm that all lead-based paint is stabilized.
(No deteriorated paint in a cleared dwelling.)
2. Chewable, impact, and friction surfaces marked for treatment have been treated.



307

CLEARANCE INSPECTIONS

VISUAL EXAMINATION

Settled Dust and Debris

- No evidence of settled dust following cleanup.
- Contractor must remove settled dust before clearance sampling.
- “White glove test” may be a good indicator for contractors.
- Ensure that all waste and debris have been removed.
- Ensure that lead dust and paint chips did not get outside dwelling.
- Check for paint chips in bare soil.



308

CLEARANCE INSPECTIONS

CLEARANCE DUST SAMPLING

- Conduct after all surfaces are sealed.
- Done at least one hour after final cleaning to allow dust to settle on surfaces.
- May use single surface or composite samples. If recleaning is needed, composite sampling may be more costly.



309

CLEARANCE INSPECTIONS

MULTIFAMILY HOUSING (>20 units)

- Random sampling is permitted, but ONLY if done by a certified lead inspector/risk assessor. (Cannot be done by a certified visual risk assessor.)
- 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.



310

CLEARANCE INSPECTIONS

SINGLE-FAMILY HOUSING (20 or fewer units)

- All units must be tested.



311

CLEARANCE INSPECTIONS


Clearance Category	Category Description	Number and Location of Single-Surface Wipe Samples in Each Area	Number and Location of Composite Wipe Samples
1	Interior treatments with no containment within dwelling	<p>Three dust samples each from at least four rooms (whether treated or untreated):</p> <p>One floor.</p> <p>One interior window sill</p> <p>One window trough</p> <p>AND</p> <p>For common areas, one floor sample for every 2,000 ft² of common area floor.</p>	<p>Three composite samples for every batch of four rooms (whether treated or untreated):</p> <p>One floor composite.</p> <p>One Interior window sill composite.</p> <p>One window trough composite.</p> <p>AND</p> <p>For common areas, one floor subsample for every 2,000 ft² (up to 8,000 ft² for each composite sample).</p>



312


Clearance Category	Category Description	Number and Location of Single-Surface Wipe Samples in Each Area	Number and Location of Composite Wipe Samples
2	Interior treatments with containment between treated and untreated areas (plastic airlock).	<p>Three dust samples each from at least four treated rooms. Stairways, hallways, porches, etc. are considered separate rooms.</p> <p>One floor.</p> <p>One interior window sill</p> <p>One window trough</p> <p>AND</p> <p>One floor sample outside containment area (within 10 feet of airlock)**.</p> <p>AND</p> <p>For common areas, one floor sample for every 2,000 ft² and one floor sample outside containment.</p>	<p>Three composite samples for every batch of four treated rooms. Stairways, hallways, porches, etc. are considered separate rooms.</p> <p>One floor composite.</p> <p>One Interior window sill composite.</p> <p>One window trough composite.</p> <p>AND</p> <p>One floor sample outside containment area (within 10 feet of airlock)**.</p> <p>AND</p> <p>For common areas, one floor subsample for every 2,000 ft² (up to 8,000 ft² for each composite sample).</p>

**This is required by state and federal law for all abatement projects and for all clearance in HUD assisted housing.



313

SINGLE-SURFACE VERSUS COMPOSITE SAMPLING FOR CLEARANCE		
Room Number	Single-Surface Sample	Composite Sample
1 – Carpeted	#1 Floor #2 Window Sill #3 Window Trough	#1 Floor #2 Window Sill #3 Window Trough
2- Carpeted	#4 Floor #5 Window Sill #6 Window Trough	#1 Floor #2 Window Sill #3 Window Trough
3- Carpeted		#1 Floor #2 Window Sill #3 Window Trough
4- Carpeted		#1 Floor #2 Window Sill #3 Window Trough
5 - No carpet	#7 Floor #8 Window Sill #9 Window Trough	#4 Floor #5 Window Sill #6 Window Trough
6 – No carpet	#10 Floor #11 Window Sill #12 Window Trough	#4 Floor #5 Window Sill #6 Window Trough
7 – No carpet		#4 Floor #5 Window Sill #6 Window Trough
Total Number Dust Samples (to lab)	12 samples	6 samples



314

Example of single surface clearance data from a seven room unit where no containment was used. What components from what rooms fail? What components will need to be re cleaned? Retested?

Room	Floors ($\mu\text{g}/\text{ft}^2$)	Sills ($\mu\text{g}/\text{ft}^2$)	Troughs ($\mu\text{g}/\text{ft}^2$)
1	218	40	350
2			
3	30	65	90
4			
5	42	20	60
6	38	20	500
7			



315

CLEARANCE INSPECTIONS

RE-CLEANING TO MEET CLEARANCE

- Focus on areas where first round of cleaning was inadequate. Once a component has passes it's final and no further testing is required.
- If one component in a room fails, re-clean only that component in the affected rooms.
- If composite samples fail, all surfaces represented by the sample must be re-cleaned (or resampled individually).



316

CLEARANCE INSPECTIONS

CLEARANCE TESTING REPORT

When clearance testing is required, a clearance report shall be prepared.

If the activity is abatement, the clearance testing report must be part of the abatement report.

- Due 3 weeks for abatement
- Due 30 days for non-abatement



317

CLEARANCE INSPECTIONS

CLEARANCE TESTING REPORT

For activities other than abatement, the following information must be included in the clearance testing report:

- The address of the dwelling unit, including apartment numbers, and whether common areas are included in the areas where work was done.
- The date of the clearance examination.
- The name, address, signature, and certification number of the person conducting the clearance examination.
- The results of the visual assessment for deteriorated paint and visible dust, debris, residue, or paint chips.
- The results of the analysis of dust samples, in micrograms per square foot, by location of sample.



318

CLEARANCE INSPECTIONS

CLEARANCE TESTING REPORT

For activities other than abatement, the following information must be included in the clearance testing report:

- The name and address of each laboratory that conducted the analysis of the dust samples, including the identification number for the laboratory as recognized by EPA under the NLLAP program.
- The start and completion dates of the hazard reduction or maintenance activity.
- The name and address of each firm or organization conducting the hazard reduction or maintenance activity and the name of the supervisor assigned.



319

CLEARANCE INSPECTIONS

CLEARANCE TESTING REPORT

For activities other than abatement, the following information must be included in the clearance testing report:

- A detailed description of the hazard reduction or maintenance activity, including methods used, locations of exterior surfaces, interior rooms, common areas, and components where hazard reduction occurred, and any recommended monitoring of encapsulants or enclosures.
- If soil hazards were reduced, a detailed description of locations of the hazard reduction activity and methods used.



320

CLEARANCE INSPECTIONS

CLEARANCE TESTING REPORT

For activities other than abatement, the following information must be included in the clearance testing report:

- It must be clear that the property owners will receive a copy of the report and that they have been advised about their obligation to disclose the report to future tenants or buyers.
- It must also be clear that the owners has been advised about Iowa's pre renovation notification requirements.

This report will be one of the main items that IDPH examines when conducting compliance inspections of certified sampling technicians.



321

CLEARANCE INSPECTIONS

RECORDKEEPING

Clearance records must be kept by property owner, contractor, and clearance inspector.

Property owner should keep for life of the property.

Contractor and inspector must keep for at least 3 years.



322

YOUR LICENSING

SAMPLING TECH LICENSING REMINDER

- Must be licensed to do any lead activities.
- Passing this course does NOT mean you are licensed.
- Passing this course does NOT automatically license you.
- To become licensed you must apply for your license through the IDPH online licensing website and pay the \$180 licensing fee.
- Licensing is valid for three years during which time you must take your 8hr refresher class to renew your license.

