



# CHAPTER 16: INVESTIGATION AND TREATMENT OF DWELLINGS HOUSING CHILDREN WITH ELEVATED BLOOD LEAD LEVELS

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# Investigation and Treatment of Dwellings Housing Children With Elevated Blood Lead Levels: How To Do It

1. Identify children with elevated blood lead (EBL) levels. Children with blood lead levels greater than or equal to 20  $\mu\text{g}/\text{dL}$  (or a *persistent* 15  $\mu\text{g}/\text{dL}$ ) are considered EBL children. Blood lead levels can be determined through local health departments, local childhood lead-poisoning prevention programs, or other health care providers. Ensure that further medical treatment or case management is undertaken by the responsible authority (if appropriate).
2. Coordinate with the child's parents and the appropriate public health, environmental, and housing agencies to avoid duplication of efforts and to determine how the investigation should best be conducted.
3. Review the findings of any risk assessment (Chapter 5), reevaluation (Chapter 6), or lead-based paint inspection (Chapter 7) that has already been completed for the property. The protocols in Chapters 5 and 7 are not adequate for use in dwellings with a lead-poisoned child, since additional environmental testing and interviewing are often required.
4. Conduct a comprehensive interview using the questionnaire in this chapter or an equivalent questionnaire. If a clear lead hazard is identified, correct the hazard within the applicable regulatory timeframe. If necessary, conduct environmental sampling to confirm the presence of the hazard.
5. If no clear lead hazard source can be identified from the interview, conduct targeted environmental testing using the protocol contained in this chapter. Even if a source becomes apparent during environmental testing, it may not be the true or only source of exposure. Environmental testing in the case of a dwelling housing an EBL child may include:
  - ◆ Paint testing of all surfaces with defective paint (including painted furniture and play structures).
  - ◆ Paint testing of all chewable surfaces.
  - ◆ Paint testing of all friction surfaces.
  - ◆ Dust testing.
  - ◆ Soil testing.
  - ◆ Water testing.
  - ◆ Testing of glazed pottery or dinnerware that may contain lead glazes.
  - ◆ Testing other site-specific, lead hazard sources.



## Step-by-Step Summary (continued)



6. Where lead hazard control measures are indicated, relocate the child until the work is completed. If time elapses prior to environmental intervention, temporary lead hazard control measures should be immediately taken to protect the child living in the dwelling unit.
7. Conduct clearance examination.
8. Permit reoccupancy if results of clearance testing are acceptable.



# Chapter 16: Investigation and Treatment of Dwellings Housing Children With Elevated Blood Lead Levels

## I. Introduction

This chapter provides a method for investigating the possible causes of lead poisoning in an individual child. Although lead-based paint and lead-contaminated dust and soil are the causes of most lead exposure in American children, another lead source may be the principal cause for a specific instance of lead poisoning or contribute to the blood lead elevation (secondary source). The methods and descriptions contained in this chapter are consistent with those used by the Centers for Disease Control and Prevention (CDC) and by local lead-poisoning prevention programs across the Nation.

The protocol in this chapter is fundamentally different from the risk assessment protocol in Chapter 5 and the lead-based paint inspection protocol in Chapter 7 of these *Guidelines*. Both of those protocols are meant for use in dwellings regardless of a resident child's blood lead level ("primary prevention"). The protocol in this chapter is intended for use as part of "secondary prevention," which involves medical and environmental followup services for individual lead-poisoned children (i.e., children whose blood lead levels are greater than or equal to 20  $\mu\text{g}/\text{dL}$ ) (CDC, 1991b). However, many of the basic procedures and sampling methods are similar.

The investigations of dwellings housing lead-poisoned children differ from normal risk assessments in the following six important ways:

- (1) The purpose of the investigation is to identify a cause or causes for the lead poisoning of a child. A normal risk assessment attempts to uncover lead-based paint hazards in a dwelling, regardless of whether a child is poisoned.
- (2) The investigator is obligated to conduct a comprehensive investigation of all sources of lead in the child's environment, not just those lead exposures directly related to the child's residence. This investigation includes studying relatively uncommon sources of lead, such as glazed pottery and traditional medicines or remedies, and other dwellings or areas frequented by the child. Some of these sources may be discovered by the results of the questionnaire.
- (3) The property owner is not the sole decisionmaker regarding the appropriate hazard control options and the development of a plan. Parents and local regulatory and other agencies are also included in the decisionmaking.
- (4) The investigator tests deteriorated paint on furniture identified as a potential lead hazard to the lead-poisoned child, regardless of who owns the furniture.
- (5) The range of dust sampling in a dwelling depends on the areas frequented by the child.
- (6) Bare soil areas frequented by the child should be identified and sampled individually so that the hazards in a particular play area can be quantified.

Many activities described in this chapter are generally performed by local health departments and childhood lead-poisoning prevention programs, which bear the principal responsibility for responding to individual cases in some

jurisdictions. However, situations may occur when private risk assessors or investigators are hired by State or local public health authorities or parents to investigate the dwelling of a child with an elevated blood lead level. Any child with a blood lead level greater than or equal to 20  $\mu\text{g}/\text{dL}$  (or a *persistent* 15  $\mu\text{g}/\text{dL}$ ) is considered an EBL child. Some of these local agencies can only respond to the children with the highest blood lead levels, leaving less serious cases for others to investigate. In addition, many jurisdictions may not have programs available to investigate EBL children. Medicaid and other third-party payers may reimburse expenses for investigations performed by certified, private-sector investigators.

Investigators who gather the information needed to characterize possible hazards in dwellings that house EBL children should possess good interviewing techniques as well as proficiency in risk assessment and environmental sampling techniques.

Private individuals who respond to lead-poisoned children should always coordinate their activities with local authorities, such as health care providers, physicians, public health nurses, public health environmental investigators, and housing agencies to prevent unnecessary duplication of effort and to acquire information on sources of lead poisoning that may be significant in a specific locale or culture. In some instances risk assessments or lead-based paint inspections may have already been completed. Before eliminating paint or dust as the cause of the poisoning, the investigator should carefully review any previous reports to assess the quality of the previous investigations.

### A. Information for Parents on the Meaning of Blood Lead Levels

Investigators are sometimes asked to explain the meaning of a particular blood lead level. For a specific child, this interpretation is best left to the child's pediatric health care provider. States and local health departments may also provide the basic information to parents. (See Table 16.1 for information about blood lead levels.)

## II. Management of Lead Hazards in the Environment of Individual Children

The investigation of lead-poisoned children is a complex issue requiring team work. Three governmental entities are most likely involved: public health, environmental, and housing agencies.

### A. Public Health Case Management

Public health case management consists of coordinating the child's care and followup, usually managed by a trained public health professional, such as a physician, public health nurse, other health care provider, or public health investigator. This management includes monitoring of medical care, education of the family, and coordination of services. Care for lead-poisoned children often entails repeated blood lead level testing, psychological and mental development testing, and medical treatment that may include iron therapy and chelation treatment. Families should be educated about lead poisoning, including how to recognize warning signs and symptoms, how to reduce risks, and how to help their child get well. In addition, environmental investigation and intervention is required. The public health case manager, if available, should help the family schedule visits, arrange transportation, care for other young children, and monitor the affected child. Some families will need extensive case management and referral to social service providers. The public health case manager is the primary point of contact between the childhood lead-poisoning prevention program and the family.

### B. Environmental Investigation and Intervention

Environmental investigation and intervention are usually managed by agencies and programs with legal responsibility for the protection of human health in the dwelling environment; responsibilities may be shared by public health, environmental, and housing agencies. Public health or environmental agencies may have the

Table 16.1 How To Interpret Blood Lead Levels in Children<sup>1</sup>

Venous <sup>2</sup> Confirmed Blood Lead Level (µg/dl)	Interpretation for Children Under Age 6	Action
Below 10	Child is not lead poisoned.	Another blood lead test may be needed next year. Inform a doctor if the child lives in a dwelling built before 1978 or in an older house that is being renovated or repainted. Control any known lead hazards.
10–14	Child has <i>some</i> exposure to lead.	Another blood lead test will be needed. Talk to a doctor. Check the dwelling unit for <i>possible</i> lead hazards and seek more information. Control any known lead hazards.
15–19	Child is considered an EBL child if blood lead is persistent at this level.	Another blood lead test is needed. Talk to a doctor. If the repeated test is still in this range, have the dwelling checked for <i>possible</i> lead hazards using the methods described in this chapter. Control any known hazards.
20–44	Child is considered lead-poisoned.	A full medical checkup, including more blood lead tests and medical care needed until the blood lead level is normal. The child needs to move to a lead-safe dwelling. Get professional help from the health department or from a private risk assessor or investigator to find the lead hazards.
Above 45	Child is severely lead-poisoned. <i>A blood lead level over 70 µg/dL is a medical emergency.</i>	A full medical checkup and medical treatment ( <i>chelation</i> ) is needed <b>NOW!</b> Hospital stay may be required. The child <i>must</i> be removed from lead hazards. Get professional help from the health department or from a private risk assessor or investigator to find the lead hazards. The child needs to reside in a lead-safe dwelling to get well.

<sup>1</sup> Adapted from the *Maryland Childhood Lead Poisoning Prevention Program* brochure.

<sup>2</sup> Blood lead levels are best measured using venous sampling, rather than capillary (finger-stick) methods, which are more susceptible to contamination.

responsibility, technical equipment, and expertise for the investigation, but housing agencies may have to enforce the codes or laws.

For EBL children, a public health nurse or case manager can assess the dwelling for obvious lead hazards, educate the family about how to reduce those hazards, and monitor the child's blood lead levels. If the assessment identifies serious environmental lead hazards or if the child's blood lead level continues to increase, a thorough environmental investigation should be performed.

For lead-poisoned children, a thorough environmental investigation of all possible sources of lead exposure for the individual child and possible intervention are needed to protect the child from further exposure and harm. Lead-based paint or the lead-contaminated dust and soil it generates may or may not be the main source of the child's exposure to lead. A visit with the public health authorities may improve the communication with the family, the collection of accurate information about the child's exposure, and the success of any needed intervention.

The environmental investigation should be performed during a visit to the child's current dwelling unit. The parents or guardians should be questioned regarding all possible lead sources and risk factors. (Use the questionnaire in Table 16.2.) If the child has recently moved, the child's blood lead level may reflect exposure to lead hazards at the previous residence. Where primary and secondary locations are identified (such as present and previous dwelling unit and/or day care center/dwelling unit), all of the locations should be investigated. Testing a previous residence will also identify lead hazards that could harm other young children currently living in that dwelling. Where the questionnaire results indicate that the child may have been exposed to other sources of lead, including drinking water, soil, toys, traditional or "home" remedies, parental occupation, and hobbies, additional environmental testing may be required. The environmental investigator will conduct sampling to identify whether lead hazards are present. If assessment of additional dwelling units or a day-care center/dwelling is required, the investigator should make the necessary arrangements for assessment and possible testing at these locations.

Once the assessment of all possible sources of lead exposure has been completed, the most probable source(s) of the child's poisoning can be identified and remedial actions to eliminate further lead exposure of the child can be recommended. The investigator should always recommend temporary measures to immediately reduce the child's exposure to lead hazards. Where probable sources of poisoning are not related to a building (for example, use of ceramics or traditional remedies), followup should be referred to the public health team.

The results of the investigation should be released only to parents and public health authorities. Confidential information about the child or household should not be revealed to any other individual or agency. Information concerning building and site hazards and options for correction of those hazards should be reported to both the owner and/or occupant.

If legal action is necessary, public health authorities should determine (based on

State and local law) the nature and extent of requirements for the property. In some cases the appropriate response may be to help the family move the poisoned child into a lead-safe dwelling unit.

In some situations the investigator and public health case manager will be unable to identify sources of lead exposure. The source may be obscure or the parent or guardian may be concealing information about a babysitter or family member whose interests they want to protect. This situation can best be handled by establishing a good rapport with the family and convincing them that the intent is not to find the family or any individual at fault but rather to help the child get well.

During the investigation and remediation, the investigator and public health team should discuss their concerns with the family in a clear and direct manner for the well-being of the child. If exposures continue, the child will be unable to get well. The best approach is to provide clear information and to maintain contact and open communication with the family. The public health case manager may continue to follow the child's medical followup and treatments.

### C. State/Local Housing Intervention

Public-sector health and housing agencies should take joint responsibility for coordination of the housing effort for lead-poisoned children. This effort may involve working closely with the environmental investigator to require control of lead hazards. Housing officials can also use their access to State and locally managed properties and programs to ensure that lead-safe, temporary housing is available for families with lead-poisoned children.

## III. Lead Hazard Identification

Lead hazards are identified through the administration and evaluation of a questionnaire (see Table 16.2) and through environmental sampling. Sampling procedures are addressed in



Chapters 5 and 7 and Appendixes 13 and 14.1. The questionnaire should always be completed prior to sampling. In some cases, a clear lead source will emerge from the answers to the questionnaire. If this occurs, the investigation of exposure sources should still be thorough and complete. Environmental testing should be linked to the child's history and may include a prior residence or other areas frequented by the child.

If the child's home is identified as a probable source of lead exposure, appropriate environmental sampling should be conducted. This should include the following samples:

- ◆ X-ray fluorescence (XRF) or laboratory paint-chip analysis of all defective paint on the dwelling, furniture, play structures, or on nearby buildings frequented by the child.
- ◆ XRF or laboratory paint-chip analysis of all chewable, impact, and friction surfaces.
- ◆ Dust samples from areas frequented by the child, including play areas, porches, kitchens, bedrooms, and living and dining rooms. Dust samples may also be collected from automobiles, work shoes, and laundry rooms (to assess the leaded dust on work clothes brought into the dwelling) if occupational lead exposure is a possibility.
- ◆ Soil samples from play areas, areas near the foundation of the house, and areas from the yard. If the child spends significant time at a park or other public play area, samples should also be collected from these areas, unless the area has already been sampled.
- ◆ First-drawn and flushed water samples from the tap most commonly used for drinking water, infant formula, or food preparation.
- ◆ Glazed dinnerware or ceramic cookware containing lead.

The source of lead exposure should be controlled if the results of this sampling indicate that lead levels are equal to or greater than the limits listed below. Investigators should become

familiar with their State and local jurisdiction standards, which may require action at a lower level.

### *Paint*

1.0 mg/cm<sup>2</sup> or 5,000 µg/g (0.5 percent).

### *Dust (by wipe sampling)*

The U.S. Environmental Protection Agency (EPA) will promulgate a health-based standard for leaded dust.

Clearance Standards:

100 µg/ft<sup>2</sup>—floors.

500 µg/ft<sup>2</sup>—interior window sills.

800 µg/ft<sup>2</sup>—window troughs into which the sash fits and exterior surfaces.

800 µg/ft<sup>2</sup>—exterior surfaces (porches, sidewalks).

### *Bare Residential Soil*

400 µg/g

### *Water*

15 ppb

### *Ceramic or Pottery Glazes*

See the U.S. Food and Drug Administration (FDA) *Compliance Policy Guidelines on Lead in Ceramic Foodware* for further information on testing ceramic or pottery glazes for lead. The leachate for ceramic foodware is analyzed using method 973.32 of the Association of Official Analytical Chemists (AOAC). The following leachate standards have been developed (FDA, 1992):

- ◆ 3 µg/g—Plates, saucers, and other flatware.
- ◆ 2 µg/g—Small hollowware (cereal bowls).
- ◆ 1 µg/g—Large hollowware.
- ◆ 0.5 µg/g—Cups, mugs, and pitchers.



## IV. Lead Hazard Correction

### A. Time Limits

After reviewing the results of the questionnaire and the environmental sampling, steps should be taken to remove and/or control the lead source from the dwelling unit or to relocate the child.

For public housing, other federally supported housing programs, and certain publicly funded housing programs, regulations may require that all testing be completed within 5 days after an EBL child is identified. As a result, the child may be relocated to a dwelling free of lead-based paint hazards. If the child is not relocated, full correction of all lead hazards must be completed within 14 days for most housing programs.

Local jurisdictions may have different time requirements.

### B. Modifications to Normal Lead-Based Paint Hazard Controls

Dwellings where extensive lead hazard control activities are occurring, particularly those that increase leaded dust levels, should achieve leaded dust clearance standards before the lead-poisoned child and family reoccupy the dwelling. EBL children should not be permitted to reenter the dwelling at the end of the workday as indicated under Interior Worksite Preparation Levels 1 and 2 and Exterior Worksite Preparation Levels 1 and 2 in Chapter 8. All EBL children should leave the dwelling until *all* the lead hazard control work has been completed and clearance established, regardless of the size of the area to be treated.

In some cases it may make sense for the family to move permanently to a lead-safe house. The owner may be required to facilitate such a move, or local government may assume some or all of the responsibility. In some cities public housing authorities may be one source of providing lead-safe housing on an emergency basis. All local governments should implement a system of prioritization to ensure that EBL children are moved to a lead-safe dwelling as soon as possible.

### C. Elimination or Control of Other Lead Hazards

All lead hazards identified in the course of the investigation should be eliminated or controlled. If lead hazards not containing paint are identified, the appropriate agency should be contacted. Drinking water is usually regulated by the local public works agency or water and sewage authority; State or local environmental regulatory agencies should also be notified. If probable occupational lead hazards are identified or contaminated work clothing is being taken into the dwelling, the worker should be cautioned regarding the possibility of take-home exposures and informed of the steps necessary to protect family members. In addition, the Federal or State Occupational Safety and Health Administration (OSHA) should be informed. When appropriate, adult household members may be referred for blood lead testing.

In some cases no probable source of lead may emerge. In these cases public health authorities should reassess possible sources of exposure, with increased emphasis on traditional remedies and other culturally related exposures. Surveillance of the child's blood lead levels should continue until the source is identified.



Table 16.2 Resident Questionnaire for Investigation of Children With Elevated Blood Lead Levels

The results of this questionnaire will be used for two purposes:

- ◆ To determine where environmental samples should be collected.
- ◆ To develop corrective measures related to use patterns and living characteristics (e.g., flushing the water line if water lead levels are high, moving the pet's sleeping area if it appears the pet is tracking in leaded dust, and so forth).

The investigator should always recommend temporary measures to immediately reduce the child's exposure to lead hazards.

**General Information**

1. Where do you think the child is exposed to the lead hazard? \_\_\_\_\_

2. Do you rent or own your home? rent own (circle)

If rented, are there any rent subsidies? yes no (circle)

If yes, what type: (check)

\_\_\_ Public housing authority

\_\_\_ Section 8

\_\_\_ Federal rent subsidy

\_\_\_ Other (specify): \_\_\_\_\_

*Landlord Information* (or rent collector agent)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

3. When did you/your family move into this home?

Complete the following for all addresses where the child has lived during the past 12 months:

Dates of residency	Address (include city and State)	Approximate age of dwelling	General condition of dwelling: Any remodeling or renovation? Any deteriorated paint?



4. Is the child cared for away from the home? (This would include preschool, day-care center, day-care home, or care provided by a relative or friend.)

If YES, complete the following:

Type of care	Location of care (name of contact, address, and phone number)	Approximate number of hours per week at this location	General condition of structure. Any deteriorated paint? Any recent remodeling or renovation?

**Lead-Based Paint and Lead-Contaminated Dust Hazards**

1. Has this dwelling been tested for lead-based paint or lead-contaminated dust? yes no (circle)

If yes, when? Where can this information be obtained? \_\_\_\_\_

2. Approximately what year was this dwelling built? \_\_\_\_\_ If unknown, was the dwelling built before 1950? \_\_\_\_\_

3. Has there been any recent repainting, remodeling, renovation, window replacement, sanding, or scraping of painted surfaces inside or outside this dwelling unit? If yes, describe activities and duration of work in more detail. \_\_\_\_\_

4. Has any lead abatement work been conducted at this dwelling recently? yes no (circle)

5. Where does the child like to play or frequent? (Include rooms, closets, porches, outbuildings.)

6. Where does the child like to hide? (Include rooms, closets, porches, outbuildings.)

Complete the following table:

Areas where child likes to play or hide	Paint condition (intact, fair, poor, or not present)*	Location of painted component with visible bite marks

\* Paint condition: Note location and extent of any visible chips and/or dust in window wells, on window sills, or on the floor directly beneath windows. Do you see peeling, chipping, chalking, flaking, or deteriorated paint? If yes, note locations and extent of deterioration.



*Assessment:* (check)

- \_\_\_\_\_ Probable lead-based paint hazard.
- \_\_\_\_\_ Probable leaded dust hazard.

*Action:* (check)

- \_\_\_\_\_ Obtain records of previous environmental testing noted above.
- \_\_\_\_\_ XRF Inspection of dwelling (circle one): limited complete.
- \_\_\_\_\_ Paint Testing—deteriorated paint: add any additional areas to Form 5.3.
- \_\_\_\_\_ Leaded dust sampling of home: add any additional areas to the list of rooms to be sampled, using Form 5.4.
- \_\_\_\_\_ Other sampling (specify): \_\_\_\_\_

**Water Lead Hazards**

1. What is the source of drinking water for the family? (circle)    municipal water    private well

Other (specify): \_\_\_\_\_

(This information will be used to help determine responsibility and methods of controlling lead exposures from water.)

If tap water is used for drinking, please answer the following:

2. From which faucets do you obtain drinking water? (Sample from the main drinking water faucet.)
3. Do you use the water immediately or do you let the water run for awhile first? (If water lead levels are elevated in the first flush, but low in the flushed sample, recommend flushing the water after each period the water has remained standing in the pipe for more than 6 hours.)
- \_\_\_\_\_

4. Is tap water used to prepare infant formula, powdered milk, or juices for the children?

If yes, do you use hot or cold tap water?

If no, from what source do you obtain water for the children?

5. Has new plumbing been installed within the last 5 years?    yes    no    (circle)

If yes, identify location(s).

Did you do any of this work yourself?    yes    no    (circle)

If yes, specify. \_\_\_\_\_

6. Has the water ever been tested for lead?    yes    no    (circle)

If yes, where can test results be obtained?

Determine whether the dwelling is located in a jurisdiction known to have lead in drinking water in either public municipal or well water. Consult with State/local public health authorities for details.  
 (check) \_\_\_\_\_ at risk \_\_\_\_\_ not at risk

*Assessment:* (check)

- \_\_\_\_\_ At risk for water lead hazards.



*Actions:* (check)

\_\_\_\_\_ Test water (first-draw and flush samples).

\_\_\_\_\_ Other testing (specify): \_\_\_\_\_

\_\_\_\_\_ Counsel family (specify): \_\_\_\_\_

**Lead in Soil Hazards**

(Use the following information to determine where soil samples should be collected.)

1. Where outside does the child like to play?
2. Where outside does the child like to hide?
3. Is this dwelling located near a lead-producing industry (such as a battery plant, smelter, radiator repair shop, or electronics/soldering industry?)    yes    no    (circle)
4. Is the dwelling located within two blocks of a major roadway, freeway, elevated highway, or other transportation structures?
5. Are nearby buildings or structures being renovated, repainted, or demolished?
6. Is there deteriorated paint on outside fences, garages, play structures, railings, building siding, windows, trims, or mailboxes?
7. Were gasoline or other solvents ever used to clean parts or disposed of at the property?
8. Are there visible paint chips near the perimeter of the house, fences, garages, play structures? If yes, note location.
9. Has soil ever been tested for lead? If yes, where can this information be obtained?
10. Have you burned painted wood in a woodstove or fireplace? If yes, have you emptied ashes onto soil? If yes, where?

*Assessment:* (check)

\_\_\_\_\_ Probable soil lead hazard.

*Actions:* (check)

\_\_\_\_\_ Test soil. Complete Field Sampling Form for Soil (Form 5.5). Obtain single samples for each bare soil area where the child plays.

\_\_\_\_\_ Advise family to obtain washable doormats for entrances to the dwelling.

\_\_\_\_\_ Counsel family to keep child away from bare soil areas thought to be at risk.

(specify): \_\_\_\_\_

**Occupational/Hobby Lead Hazards**

Use the information in this section to determine if the child’s source of lead exposure could be related to the parents’, older siblings’ or other adults’ work environment. Occupations that may cause lead exposure include the following:

- ◆ Paint removal (including sandblasting, scraping, abrasive blasting, sanding, or using a heat gun or torch).
- ◆ Chemical strippers.



- ◆ Remodeling, repairing, or renovating dwellings or buildings, or tearing down buildings or metal structures (demolition).
- ◆ Plumbing.
- ◆ Repairing radiators.
- ◆ Melting metal for reuse (smelting).
- ◆ Welding, burning, cutting, or torch work.
- ◆ Pouring molten metal (foundries).
- ◆ Auto body repair work.
- ◆ Working at a firing range.
- ◆ Making batteries.
- ◆ Making paint or pigments.
- ◆ Painting.
- ◆ Salvaging metal or batteries.
- ◆ Making or splicing cable or wire.
- ◆ Creating explosives or ammunition.
- ◆ Making or repairing jewelry.
- ◆ Making pottery.
- ◆ Building, repairing, or painting ships.
- ◆ Working in a chemical plant, a glass factory, an oil refinery, or any other work involving lead.

1. Where do adult family members work? (include mother, father, older siblings, other adult household members)

Name	Place of employment	Occupation or job title	Probable lead exposure (yes/no)

2. Are work clothes separated from other laundry?
3. Has anyone in the household removed paint or varnish while in the dwelling? (includes paint removal from woodwork, furniture, cars, bicycles, boats)
4. Has anyone in the household soldered electric parts while at home?
5. Does anyone in the household apply glaze to ceramic or pottery objects?
6. Does anyone in the household work with stained glass?
7. Does anyone in the household use artist's paints to paint pictures or jewelry?



8. Does anyone in the household reload bullets, target shoot, or hunt?
9. Does anyone in the household melt lead to make bullets or fishing sinkers?
10. Does anyone in the household work in autobody repair at home or in the yard?
11. Is there evidence of take-home work exposures or hobby exposures in the dwelling?

*Assessment:* (check)

\_\_\_\_\_ Probable occupational-related lead exposure.

\_\_\_\_\_ Probable hobby-related lead exposure.

*Actions:* (check)

\_\_\_\_\_ Counsel family (specify):

\_\_\_\_\_ Refer to (specify): \_\_\_\_\_

### **Child Behavior Risk Factors**

1. Does child suck his/her fingers?    yes    no    (circle)
2. Does child put painted objects into the mouth?    yes    no    (circle)  
If yes, specify: \_\_\_\_\_
3. Does child chew on painted surfaces, such as old painted cribs, window sills, furniture edges, railings, door molding, or broom handles?  
If yes, specify: \_\_\_\_\_
4. Does child chew on putty around windows?
5. Does child put soft metal objects in the mouth? These might include lead and pewter toys and toy soldiers, jewelry, gunshot, bullets, beads, fishing sinkers, or any items containing solder (electronics).
6. Does child chew or eat paint chips or pick at painted surfaces? Is the paint intact in the child's play areas?
7. Does the child put foreign, printed material (newspapers, magazines) in the mouth?
8. Does the child put matches in the mouth? (Some matches contain lead acetate.)
9. Does the child play with cosmetics, hair preparations, or talcum powder or put them into the mouth? Are any of these foreign made?
10. Does the child have a favorite cup? A favorite eating utensil? If yes, are they handmade or ceramic?
11. Does the child have a dog, cat, or other pet that could track in contaminated soil or dust from the outside? Where does the pet sleep?
12. Where does the child obtain drinking water?
13. If child is present, note extent of hand-to-mouth behavior observed.

*Assessment:* (check)

\_\_\_\_\_ Child is at risk due to hand-to-mouth behavior.

\_\_\_\_\_ Child is at risk for mouthing probable lead-containing substance (specify): \_\_\_\_\_

\_\_\_\_\_ Child is at risk for other (specify): \_\_\_\_\_



*Actions:*

\_\_\_\_\_ Counsel family to limit access or use of (specify):

\_\_\_\_\_ Other (specify): \_\_\_\_\_

**Other Household Risk Factors**

1. Are imported cosmetics such as Kohl, Surma, or Ceruse used in the home?
2. Does the family ever use any home remedies or herbal treatments? (What type?)
3. Are any liquids stored in metal, pewter, or crystal containers?
4. What containers are used to prepare, serve, and store the child's food? Are any of them metal, soldered, or glazed? Does the family cook with a ceramic bean pot?
5. Does the family use imported canned items regularly?
6. Does the child play in, live in, or have access to any areas where the following materials are kept: shellacs, lacquers, driers, coloring pigments, epoxy resins, pipe sealants, putty, dyes, industrial crayons or markers, gasoline, paints, pesticides, fungicides, gear oil, detergents, old batteries, battery casings, fishing sinkers, lead pellets, solder, or drapery weights?
7. Does the child take baths in an old bathtub with deteriorated or nonexistent glazing?

*Assessment: (check)*

\_\_\_\_\_ Increased risk of lead exposure due to \_\_\_\_\_

*Actions: (check)*

\_\_\_\_\_ Counsel family to limit access or use (specify): \_\_\_\_\_

\_\_\_\_\_ Other (specify): \_\_\_\_\_

**Assessment for Likely Success of Hazard Control Measures**

1. What cleaning equipment does the family have in the dwelling? (circle)  
broom, mop and bucket, vacuum (does it work?), sponges and rags
2. How often does the family:  
Sweep the floors?  
Wet mop the floors?  
Vacuum the floors?  
Wash the window sills?  
Wash the window troughs?
3. Are floor coverings smooth and cleanable?
4. What type of floor coverings are found in the dwelling? (circle *all* that apply)  
vinyl/linoleum carpeting wood other (specify): \_\_\_\_\_
5. Cleanliness of dwelling (circle one):  
Code: 1 = appears clean, 2 = some evidence of housecleaning, 3 = no evidence of housecleaning,  
4 = \_\_\_\_\_, 5 = \_\_\_\_\_, 6 = \_\_\_\_\_, 7 = \_\_\_\_\_



[Pick the best category based on overall observations of cleanliness in the dwelling.]

1. Appears clean.
2. Some evidence of housecleaning.
3. No evidence of housecleaning.

No visible dust on most surfaces.  
 Evidence of recent vacuuming of carpet.  
 No matted or soiled carpeting.  
 No debris or food particles scattered about.  
 Few visible cobwebs.  
 Clean kitchen floor.  
 Clean doorjambs.  
 Slight dust buildup in corners.  
 Slight dust buildup on furniture.  
 Slightly matted and/or soiled carpeting.  
 Some debris or food particles scattered about.  
 Some visible cobwebs.  
 Slightly soiled kitchen floor.  
 Slightly soiled doorjambs.  
 Heavy dust buildup in corners.  
 Heavy dust buildup on furniture.  
 Matted and/or soiled carpeting.  
 Debris or food particles scattered about.  
 Visible cobwebs.  
 Heavily soiled kitchen floor.  
 Heavily soiled doorjambs.

*Assessment:* (check)

- Cleaning equipment inadequate.
- Cleaning routine inadequate.
- Floor coverings inadequate to maintain clean environment.

*Actions:* (check)

- Counsel family to limit access or use (specify): \_\_\_\_\_
- Provide cleaning equipment.
- Instruct family on special cleaning methods.
- Flooring treatments needed.
- Other (specify): \_\_\_\_\_