

Chapter 3: Before You Begin – Planning To Control Lead Hazards

HOW TO DO IT	3-3
I. Concept and Purpose	3-5
II. Determining Whether a Long-Term or Short-Term Response Is Appropriate	3-6
III. Review of Existing Conditions and Preliminary Determination of Lead Hazard Control Strategy	3-8
A. Condition of the Property	3-8
B. Age of the Property	3-9
C. Capital Replacement Plans (Expected Useful Dwelling Life)	3-10
D. Management and Maintenance Issues	3-11
E. Resident Population	3-11
F. Local Capacity of Trained and/or Certified Workers and Certified Firms.	3-12
G. Cost and Financing	3-12
H. Preliminary Determination of Lead Hazard Control Strategy	3-13
I. Selecting Lead Hazard Evaluation and Control Efforts	3-14
IV. Lead Hazard Evaluation – Inspection and Risk Assessment	3-16
A. Bypassing the Lead Hazard Evaluation Step	3-16
B. Risk Assessment Costs	3-16
C. Inspection Costs	3-17
D. Key Elements in a Request for Proposals (RFP) for Risk Assessment and Inspection	3-17
E. Monitoring the Risk Assessment/Inspection Process	3-17
F. Reviewing the Risk Assessment Report	3-18
G. Reviewing the Inspection Report	3-18
V. Considerations in Selecting Control Methods	3-18
A. Containment and Resident Protection	3-18
B. Worker Protection	3-19
C. Cleanup and Clearance Requirements	3-19
D. Waste Disposal	3-20
E. Extent of Concurrent Work	3-21
VI. Considerations in Cost Estimating for Lead Hazard Control	3-21
A. Type of Dwelling Unit	3-21
B. Number of Building Components and Paint Layers to Be Treated	3-22
C. Types of Items	3-22
D. Wage Rates	3-23
E. Occupancy Status	3-23
F. Security	3-23

Chapter 3: Before You Begin – Planning To Control Lead Hazards

How To Do It

1. Determine the most appropriate long-term or short-term evaluation and control response to the lead hazards for a specific property. Select the most opportune time to conduct lead hazard evaluation and control (often during unit turnover, remodeling or renovation work, refinancing, or substantial maintenance activity). Determine whether historic preservation requirements apply to the property.
2. Decide whether Federal, State, or local regulations require specific lead hazard evaluation or control activities.
3. Determine the potential for the property to contain lead hazards. If the dwelling was built before 1978 or if a child with an elevated blood lead level is present (see Glossary for technical definition), a building-related lead hazard may exist. If the dwelling was built after 1978 and no history of lead poisoning is evident, there is very little chance that a lead hazard exists and no further action is required.
4. Consider whether to acquire the services of a risk assessor and/or an inspector technician to perform an evaluation. For large multi-family projects, develop and issue a Request for Proposals (RFP) for inspections and/or risk assessments. If a property owner decides to implement lead hazard controls without a lead-based paint inspection, all painted, varnished, or other coated surfaces should be presumed to have lead-based paint.
5. Conduct an evaluation (i.e., a risk assessment, paint inspection, or a combination of the two). For properties in good condition, a lead hazard screen risk assessment is recommended to determine whether a full risk assessment is necessary (see Chapter 5).
6. If lead hazards are identified or assumed to exist, select specific lead hazard control methods for specific building components. Include waste considerations, management, resident and worker protection, and cost in determining the best method for the property. Determine the methods and the person(s) responsible for obtaining any necessary permits. Obtain a cost estimate from a certified contractor or risk assessor. Cost estimation considerations are outlined in this chapter.
7. Develop specifications for lead hazard control work (usually for large multi-family projects).
8. Conduct pilot projects and revise specifications if necessary (for large multi-family projects only).
9. Schedule other related construction work to coordinate with lead hazard control work.
10. Select a lead hazard control contractor (this may precede the pilot project). Ensure that the contractor has adequate bonding and insurance (if required).
11. Correct pre-existing problems or conditions before beginning lead hazard control work. All work disturbing painted surfaces must be performed in a lead-safe manner.
12. Determine person(s) responsible for monitoring work to ensure safety (supervisor, risk assessor/consultant, owner).

13. Select the qualified independent, certified lead-based paint inspector, sampling technician or risk assessor responsible for conducting clearance testing. Certified risk assessors should conduct the clearance testing if a hazard evaluation was not performed before work began.
14. Conduct lead abatement or interim control work, including notification of lead work to state/local jurisdictions, if required, cleanup and clearance testing.
15. Determine whether Federal regulations or local jurisdictions require issuance of certificates following clearance.
16. If lead-based paint remains on the property, arrange for ongoing monitoring by the owner or owner's representative and an appropriate reevaluation schedule by a certified professional (see Chapter 6).

I. Concept and Purpose

This chapter is designed to help plan lead hazard control efforts. It describes the process of evaluation and control and suggests items to consider in estimating costs and ensuring quality. Included are (1) methods for determining whether risk assessments or inspections are appropriate; (2) the typical phases of lead hazard control projects (both interim control and abatement); (3) the key issues to be addressed at each phase; and (4) sources for more information.

The goal of lead hazard evaluation and control in housing is to correct lead hazards in the safest and most cost-effective manner feasible. In many cases this will require the expertise of trained, licensed or certified professionals. As explained in Chapter 1, evaluation methods include presumption, lead-based paint inspection, risk assessment, a combination of the two, or lead hazard screen. Lead hazard control options generally include interim controls (which includes lead-safe maintenance) or abatement.

Residential property owners should be aware that evaluation and lead hazard control options and common practices in housing may differ from those used in public and commercial properties. Owners of public or commercial properties often perform a lead-based inspection and abate all lead-based paint during renovation, but they do not usually perform risk assessments. This approach eliminates the potential of exposure of maintenance and renovation personnel, reduces the property owner's liability, and may increase the property's value and complexity of sale. However, because of the potential risk to children under age six and pregnant women in housing, residential properties present a different set of considerations. These are discussed in these *Guidelines*.

Although many lead-based paint activities share common elements, they differ in purpose, procedure and the information they provide. It is important that owners and housing agencies, if applicable, select the most appropriate method of evaluation. HUD does not consider a visual assessment to be an evaluation method because it yields no information on lead content of paint. Similarly, simple repair of paint that is disturbed during remodeling is not considered lead hazard control. A lead-based paint inspection does not identify lead-based paint hazards. This is critical in units receiving an average of more than \$5,000 per unit of HUD-funded rehabilitation assistance because HUD requires that all lead-based paint hazards on the property be controlled as part of these projects. In these cases, a risk assessment is required. See the Glossary and Chapter 1 for complete definitions of risk assessment, inspection, interim controls, and abatement.

Thus, property owners have a wide range of evaluation and control options. Unless an owner is required to perform specific lead-related evaluation or control actions, owners may select the combination of activities that is most appropriate for the property. In addition, if specific actions are required, an owner has the flexibility to conduct more stringent or comprehensive actions based on a business decision related to lead or, perhaps, other ownership or management considerations.

Any evaluation method may be followed by either interim controls or abatement, or both may be used on surfaces or conditions in the same property. Risk assessment reports are required to contain prioritized lead hazard control options to the owner, but these options are not required in other evaluation reports. If it is reasonable to presume that painted surfaces contain lead-based paint, and/or to presume that all horizontal surfaces have lead-contaminated dust, and all bare soil is lead-contaminated, it may be cost-effective to skip the evaluation step by presuming the presence of lead-based paint and/or lead-based paint hazards, and then proceed directly to lead hazard control procedures. If an owner presumes the presence of lead-based paint hazards, there are two choices for lead hazard control: abatement of all presumed hazards or "standard treatments," which are equivalent to interim controls (see Chapter 11). This option is discussed further in Section IV below.

In-place management is an option for properties with only intact paint and no lead hazards. If all paint is intact and the owner wishes to defer lead hazard control until the time of planned renovation or unit turnover, a risk assessment is recommended. The risk assessor will identify all dust-lead, friction or impact surfaces, or soil-lead hazards to be corrected before the in-place management program of the intact paint begins.

II. Determining Whether a Long-Term or Short-Term Response Is Appropriate

As discussed above, owners have a wide range of options for lead hazard evaluation and control. The options vary from long- to short-term solutions.

Complete and permanent elimination of all lead-based paint through abatement of all known or presumed lead-based paint is definitely a long-term approach. It can be effective and safe provided that:

- ◆ All types of lead hazards are addressed, including lead-contaminated dust and soil.
- ◆ Workers and residents are not adversely affected during the work.
- ◆ The process is properly controlled so that new lead hazards are not created.
- ◆ Cleanup is adequate as determined by clearance testing.

However, for many owners, abatement of all known or presumed lead-based paint may be unnecessary or too expensive and technically demanding, at least in the short run.

Risk assessment followed by abatement of specific lead-based paint hazards is a more focused long-term approach. It focuses treatment resources on specific hazards. If encapsulation or enclosure is performed, the condition of these treatments should be periodically monitored through a lead-safe maintenance program.

Identifying lead hazards by risk assessment and treating them by using interim control methods (and perhaps abating a few key surfaces) is an effective, short-term alternative. The risk assessment/interim control approach has the advantage of treating the lead hazards to which children are likely to be exposed, while temporarily controlling and monitoring the lead-based paint on an ongoing basis. Some owners may link lead hazard control to remodeling and perform the lead work immediately prior to remodeling. This approach is required in some cases by the Lead Safe Housing Rule (See Appendix 6).

Unless regulated by the local jurisdiction or applicable Federal or State funding program, owners can select whatever strategy they wish, as long as certain prohibited paint removal practices are not used (see Chapter 11) and compliance with clearance standards is achieved when required. This provides substantial flexibility for different types of housing and ownership patterns, permits innovation, and still ensures that dwellings are lead-safe (see the Glossary for the definition of a “lead-safe dwelling”).

To determine the measures that will be most effective and safe for a given property, certain planning steps are appropriate (see Table 3.1). These steps are generally the same for all types of properties, but for smaller buildings and especially single-family homes, some of the steps may not be appropriate, as indicated by asterisks in Table 3.1.

Regulatory requirements may predetermine the lead hazard control strategy as well as when lead hazard identification efforts are required. In a few States, including Maryland and Massachusetts, evaluation and abatement of certain lead-based paint hazards (defined by each State) are mandated, under some circumstances, for rental properties. In many States and local jurisdictions, evaluation and control (to varying standards) are required when a lead-poisoned child is identified. If the dwelling receives Federal housing assistance, HUD's lead regulations for that specific program should be consulted. (HUD's lead regulations vary depending on the type and amount of Federal housing assistance that is provided.)

Table 3.1 Summary of Steps in Planning Lead Hazard Control Projects.

1. Review of existing conditions/preliminary determination of lead hazard control strategy, including historic preservation considerations.
2. Evaluation of lead-based paint and/or lead-based paint hazards.
3. Prepare format for notice of evaluation for presence of lead to residents, if required.
4. Selection of specific lead hazard control methods.
5. Selection of resident protection and worksite preparation level.
6. Development of specifications.*
7. Initiation of pilot project.*
8. Scheduling of other related construction work.
9. Selection of lead hazard control contractors. Notifications to state/local jurisdictions, if required.
10. Lead-safe correction of pre-existing conditions that could impede lead hazard control work.
11. Monitoring the work and cleanup process.
12. Clearance (and certification if required by the local jurisdiction).
13. Prepare format for notice of lead hazard control activities to residents, if required.
14. Arrangement of ongoing monitoring and reevaluation.

* Not necessarily required in single-family dwellings.

III. Review of Existing Conditions and Preliminary Determination of Lead Hazard Control Strategy

The choice of a strategy depends on the extent of the lead hazards that exist and the financial resources available to address them. In addition, before undertaking risk assessment or inspection, certain existing conditions at a property should be reviewed, since they may indicate which lead hazard control strategy is appropriate. The lack of historical evidence of lead poisoning in a particular area should not be considered conclusive when determining whether or not a population is at risk or whether a dwelling unit contains lead hazards. Although in many parts of the country there have historically been few reported cases of lead poisoning, it may be because very few children were tested. With increased public awareness and screening of children for lead poisoning, it is expected that many more children with lead poisoning will be identified. The following general issues should be reviewed:

- a. Condition of the property.
- b. Age of the property (including historic preservation considerations).
- c. Capital replacement plans for the property (or expected useful life).
- d. Ongoing management and maintenance issues.
- e. Existing and potential future occupants.
- f. Regulatory requirements.
- g. Local capacity of trained and/or certified workers.
- h. Financial resources.

Each of these considerations is described below.

A. Condition of the Property

The condition of painted building components should be a primary consideration in devising the overall lead hazard control strategy. Painted building components, especially doors and windows, must have adequate structural integrity in order to support lead hazard control treatments. If components have rotted, are deteriorated to the point where they are difficult to maintain, or if the dwelling unit is subject to recurring water infiltration or other water damage, neither interim controls nor abatement will be effective without a substantial restoration effort. Interim controls and some forms of abatement are likely to have very short lives in these situations. (See Figure 3.1)

Other factors related to the condition of the property that should be considered include the



FIGURE 3.1 Assessing the physical condition of a property.



FIGURE 3.2 HUD’s American Healthy Homes Survey found that, in 2005–2006, most pre-1940 units contained some lead-based paint.

type of building component affected, number and thickness of paint layers, and interior or exterior location on the property. Soil conditions need to be addressed as well.

B. Age of the Property

Age of the property can indicate the amount of lead-based paint likely to be present and the extent of the lead hazard control work that may be necessary. The majority of buildings built before 1978, especially those built before 1960, including most of those built before 1940, contain some lead-based paint (HUD, 2011). For older dwellings, the concentration of lead in the paint is higher. For pre-1950 properties, it is reasonable to assume that lead-based paint is present on more than a few surfaces and that abatement of lead hazards will involve a significant amount of work. Table 3.2 demonstrates the relationship between age

Table 3.2 Housing Units with Lead-Based Paint or Significant Lead-Based Paint Hazards

Year Built	Total	Lead-Based Paint		Significant Lead-Based Paint Hazards	
		Number	Percent	Number	Percent
All Years	106.033	37.058	34.9%	23.186	21.9%
1978-2005	40.458	2.675	6.6%	1.083	2.7%
1960-1977	29.956	7.376	24.6%	3.415	11.4%
1940-1959	18.117	11.921	65.8%	6.999	38.6%
Pre-1940	17.502	15.085	86.2%	11.689	66.8%

Note: Numbers of housing units in millions. Significant lead-based paint hazards are those above HUD’s *de minimis* threshold amounts in its Lead Safe Housing Rule. Further details are in the source report.

Source: HUD, 2011. American Healthy Homes Survey: Lead and Arsenic Findings. April 2011. http://portal.hud.gov/hudportal/documents/huddoc?id=AHHS_REPORT.pdf.

and prevalence of lead-based paint as of 2005-2006 (HUD, 2011a); these results confirm the previous national survey on this subject for housing as of 1998-2000 (HUD, 2001a). It is worth noting that there is tremendous variability in houses within each age group. Depending on local conditions, some pre-1950 dwellings may have no lead-based paint at all, while some newer ones built before 1978 may have a considerable amount.

In most properties built between 1960 and 1978, it is reasonable to expect that fewer surfaces with lead-based paint are present. For these properties, a lead-based paint inspection (see Chapter 7) or a lead hazard screen risk assessment (see Chapter 5) is often most cost effective to determine whether lead-based paint or lead-based paint hazards, respectively, are present. These newer properties still require hazard evaluation, since there is some evidence that significant levels of lead-based paint were sold up to at least 1971 (*New York Times*, 1971).

It is unusual but not impossible to find lead-based paint in houses built after 1978. For example, as of 1992, some health departments still periodically confiscated new residential paint containing illegal amounts of lead (Massachusetts, 1992). Starting in 1978, the Consumer Product Safety Commission permitted no more than 600 µg/g (0.06 percent; 600 parts per million (ppm)) of lead in residential paint. Effective August 14, 2009, following reports of imported toys with lead-containing coatings and enactment of the Consumer Product Safety Improvement Act of 2008, this limit was reduced to 90 parts per million (CPSC, 2009). Thus, because the use of lead in paint had almost ceased by 1978 and because of the need to focus scarce resources, houses built after 1978 are not targeted for inspection or risk assessment, unless a child with lead poisoning is identified (see Chapter 16). In some dwellings, historic preservation requirements may apply (see Chapter 18).

C. Capital Replacement Plans (Expected Useful Dwelling Life)

Future plans for the building play an important role in deciding whether long-term or short-term approaches are best. For example, if the building is expected to be demolished within 3 years, a substantial investment in lead-based paint abatement makes little sense if interim controls will adequately control the hazard(s) identified. In this case a risk assessment and interim controls are clearly best. If no children or pregnant women will live there, hazard control measures need only protect the environment and maintenance and demolition workers. Integrating lead abatement into substantial comprehensive renovation projects may be efficient and required for safety. Before capital replacement projects are performed, all painted surfaces to be disturbed should be tested for lead. It is probably cost-effective to perform a complete lead-based paint inspection at this time to determine whether additional work can eliminate other lead-based paint on the property at the same time. Inspection is especially important if the construction process will disturb painted surfaces and generate a substantial amount of dust. If lead-based paint is present in such a project, the renovation process should be designed to prevent leaded dust from being dispersed throughout the housing environment. If no lead-based paint is found, construction work can proceed in the usual fashion using traditional construction methods. If exterior soil is being disturbed, a lead hazard may remain from past use of lead-based paint or other sources (e.g., lead gas emissions, industrial effluent, etc.). If replacement or enclosure of certain components is already planned, this work may accomplish abatement of those components. These components should be inspected to determine whether the project requires additional safety controls. For building components that can be readily removed or enclosed without generating significant amounts of leaded dust, the work can usually proceed safely with the addition of a few simple controls.

If asbestos abatement or other environmental remediation is planned, it may be cost-effective to combine this work with lead abatement. Although there are some important differences, many requirements for containment and cleanup for both lead and asbestos abatement are similar (for example, use of high-efficiency particulate air (HEPA) vacuums and personal protective equipment). Therefore the same firm may be able to carry out both types of work, if certified to do both. Individuals experienced in performing combined abatements should be consulted to develop specifications for these types of projects.

D. Management and Maintenance Issues

Abatement is a permanent response to lead hazards; interim controls are temporary and require periodic checks. Both methods can produce lead-safe dwellings. Abatement normally requires an intensive effort at considerable inconvenience, but can usually be completed within a brief timeframe. To be consistently effective, interim controls require an ongoing effort as well as some inconvenience and expense at periodic intervals.

For example, painted surfaces must be examined regularly and kept in good condition (see Figure 3.3). If significant dust or soil hazards were found on risk assessment, dust and soil sampling may have to be repeated on a regular basis. If recontamination occurs after interim controls, cleanup and paint stabilization will have to be repeated. In addition, individuals performing interim controls in federally assisted housing must complete a HUD-approved curriculum in lead-safe work practices (www.hud.gov/offices/lead/training/). EPA requires that firms and renovators performing renovation in pre-1978 “target” housing and pre-1978 child-occupied facilities be certified under EPA’s Renovation, Repair, and Painting (RRP) Rule (See Appendix 6) (www.epa.gov/lead/pubs/renovation.htm).

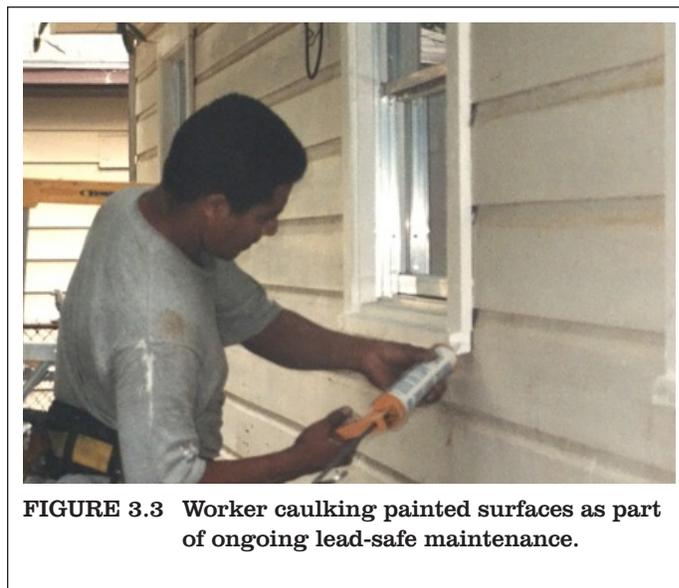


FIGURE 3.3 Worker caulking painted surfaces as part of ongoing lead-safe maintenance.

The interim control option requires that control of lead hazards becomes a formal part of normal property management. Owners and managers may choose to focus resources on a one-time, permanent abatement solution unless they are willing and able to carry out such a management regimen. Others may decide that ongoing lead-safe management is appropriate for them. Regardless of the lead hazard control option chosen, the dwelling unit must be made lead-safe.

The interim control option requires that control of lead hazards becomes a formal part of normal property management. Owners and managers may choose to focus resources on a one-time, permanent abatement solution unless they are willing and able to carry out such a management regimen. Others may decide that ongoing lead-safe management is appropriate for them. Regardless of the lead hazard control option chosen, the dwelling unit must be made lead-safe.

E. Resident Population

Children under 6 years old are especially at risk for lead poisoning and are most likely to be impaired as a result of exposure (CDC, 1991b). Dwelling units where young children currently reside, or vacant units that may be occupied in the near future by a family with a young child,

should be given high priority for hazard control. Pregnant women also are at risk, so units with pregnant women are also high priority (see Figure 3.4). Eventually, *all* older dwellings will require treatment, since one cannot predict with certainty which dwelling units will house children or pregnant women.

It is worth noting that owners who refuse to rent dwellings to families with young children or pregnant women may be in violation of the Federal Fair Housing Amendments Act of 1988.

F. Local Capacity of Trained and/or Certified Workers and Certified Firms.

Many geographic areas of the U.S. have developed an adequate capacity for performing evaluation and abatement and have a mature network of firms available to do this work. In other, especially rural, areas of the country, certified evaluation, renovation, and abatement firms are still needed. Trained interim control workers are also in short supply in some parts of the country. Because travel costs add to the total price of any construction project, owners should assess their local capacity for trained and/or certified workers working for certified firms, when developing their lead hazard control strategy. EPA requires that firms and renovators performing renovation in target housing and pre-1978 child-occupied facilities be certified under EPA's Renovation, Repair, and Painting (RRP) Rule (www.epa.gov/lead/pubs/renovation.htm; see Appendix 6).

G. Cost and Financing

The cost of lead hazard control varies enormously with the size and condition of the dwelling unit and the soil at the dwelling site, the treatments selected, contractor capacity, local wage rates, the competitiveness of the market, and other factors.

In 2001 the President's Task Force on Environmental Health Risks and Safety Risks to Children estimated the incremental rehabilitation cost for interim controls in Federally assisted housing (including interior and exterior paint stabilization, repair of window friction surfaces, clean up, clearance testing, relocation, administrative and other costs) at \$2,500 per housing unit (President's Task Force, 2001). The estimate for abatement of lead hazards was \$9,000. Abating all hazards in older dwelling units with substantial deferred maintenance can be much more expensive. Owners should not assume the cost of abatement is prohibitive until proper inspection has been completed, lead hazard control options have been identified, and costs have been estimated by qualified abatement contractors. Variables that should be considered in constructing a reliable cost estimate are described in Section VI of this chapter.

In the short run, interim control is far less expensive than abatement. In the long run, interim control may eventually exceed the cost of abatement due to ongoing maintenance, reevaluation, and cleanup.



FIGURE 3.4 Units with children have a higher priority for evaluation and control than other units.

Some properties may be eligible for loans and grants under public programs usually administered by State or local housing and/or health departments. HUD has many programs that help owners rehabilitate their properties and include lead hazard control elements. If private loans are to be used to finance the project, the properties and the lead hazard control project will probably need to meet the requirements for home improvement (generally only available for owner-occupied properties) or other equity-backed loans (first and second mortgages). Financing for these activities will be subject to the same loan underwriting requirements that apply to other types of building improvement financing. Such programs generally favor substantial capital improvements that can clearly be shown to increase the value of the property. Information on HUD's programs and how to contact a local or regional HUD office is available at: www.hud.gov.

H. Preliminary Determination of Lead Hazard Control Strategy

After reviewing these issues, the next step is to decide on an overall lead hazard control strategy to minimize the likelihood of a child under six with an elevated blood lead level (EBL).

- ◆ In some situations, a child with an EBL may already be present. If the local health department does not investigate or issue an abatement order requiring the owner to investigate and the child has an environmental intervention blood lead level (EIBLL), the owner should investigate the situation in accordance with Chapter 16 (see Option 4 in Figure 3.5). The owner should determine whether any other rules apply (e.g., HUD's Lead Safe Housing Rule (LSHR)). If so, the owner should determine which requirements are the most stringent. The owner should use the more stringent protocol at all times. (For information on the LSHR see Appendix 6)
- ◆ If no children are known to have an EBL or an EIBLL in a building built before 1978, the owner should determine whether the LSHR applies.
 - If so, the owner should use the LSHR or a more stringent protocol.
 - If not, the owner should determine whether any laws or regulations regarding historic preservation apply to the property. If historic preservation is an issue, Chapter 18 should be followed. Otherwise, the owner should determine whether any other government laws or regulations apply to the situation such as during renovation, remodeling, painting activities or interim control of lead-based paint hazards that will disrupt more than small amounts of lead-based paint and is therefore covered by EPA's Renovation, Repair, and Painting Rule (40 CFR part 745, especially subpart E), and, if the housing is HUD-assisted, HUD's LSHR (24 CFR part 35, especially subpart R). (See Appendix 6)

If none of the above conditions apply, the owner will need to select an appropriate course of action including an evaluation option, which may be a: 1) LBP risk assessment, 2) LBP paint inspection, 3) combined LBP inspection and risk assessment, or 4) no evaluation (i.e., you have no children residing in your housing and you plan to sell the property within the next twelve months). Alternatively, the owner may decide to skip the evaluation step and perform a set of standard treatments to address all potential hazards.

Based on the preceding information, the owner's decision will depend on two major factors:

- ◆ Whether or not the owner foresees that children under 6 years of age will reside in the property, and
- ◆ What level of risk the owner is willing to assume associated with a lead-poisoned child residing in the property.

In order to find the appropriate evaluation option for the level of risk tolerance using the table in Figure 3.5, the owner will probably consider many factors. Some of the common concerns affecting the choice include, but are not limited to:

- ◆ How long the owner plans to control or own the property.
- ◆ Whether the owner receives HUD assistance now, or is likely to in the future.
- ◆ The financial cost of taking action or of not taking action:
 - the total cost; and
 - the distribution of the expenditures over time.
- ◆ The owner's legal and regulatory liability, and the benefit of decreased liability.
- ◆ The financial benefits of increased value of a clean or improved property.
- ◆ The operational benefits of:
 - improved landlord-tenant relations;
 - marketing advantages of lead-safe housing units; and
 - public relations.

Because the table in Figure 3.5 breaks the spectrum of risk into three broad categories, there is a "+" and/or "-" in many cells. Owners may choose the primary option identified in the cell that matches your acceptable level of risk and expectation regarding children, or do more or less. Figure 3.5 also lists the various mitigation activities available depending on the outcome of a LBP evaluation.

Regardless of what evaluation option and subsequent lead hazard control activity selected, owners still need to document each decision. For example, owners must make appropriate disclosure when selling or leasing housing units in accordance with the Lead Disclosure Rule (24 CFR 35, subpart A) as well as notify tenants when receiving HUD assistance in accordance with the Lead Safe Housing Rule (24 CFR 35, subparts BR) (See Appendix 6).

I. Selecting Lead Hazard Evaluation and Control Efforts

The factors outlined above should assist a property owner with multiple housing units in deciding where to focus initial attention. It may not be feasible for owners to have risk assessments or inspections performed simultaneously at all properties. As long as the owner plans to identify all lead hazards in all dwellings in a timely manner, prioritizing units may be acceptable. For example, risk assessment and lead hazard control during unit turnover eliminates the expense associated with resident relocation. Older properties should generally be evaluated first, since they are more likely to contain lead-based paint. Dwelling units housing or likely to house children should also receive priority attention.

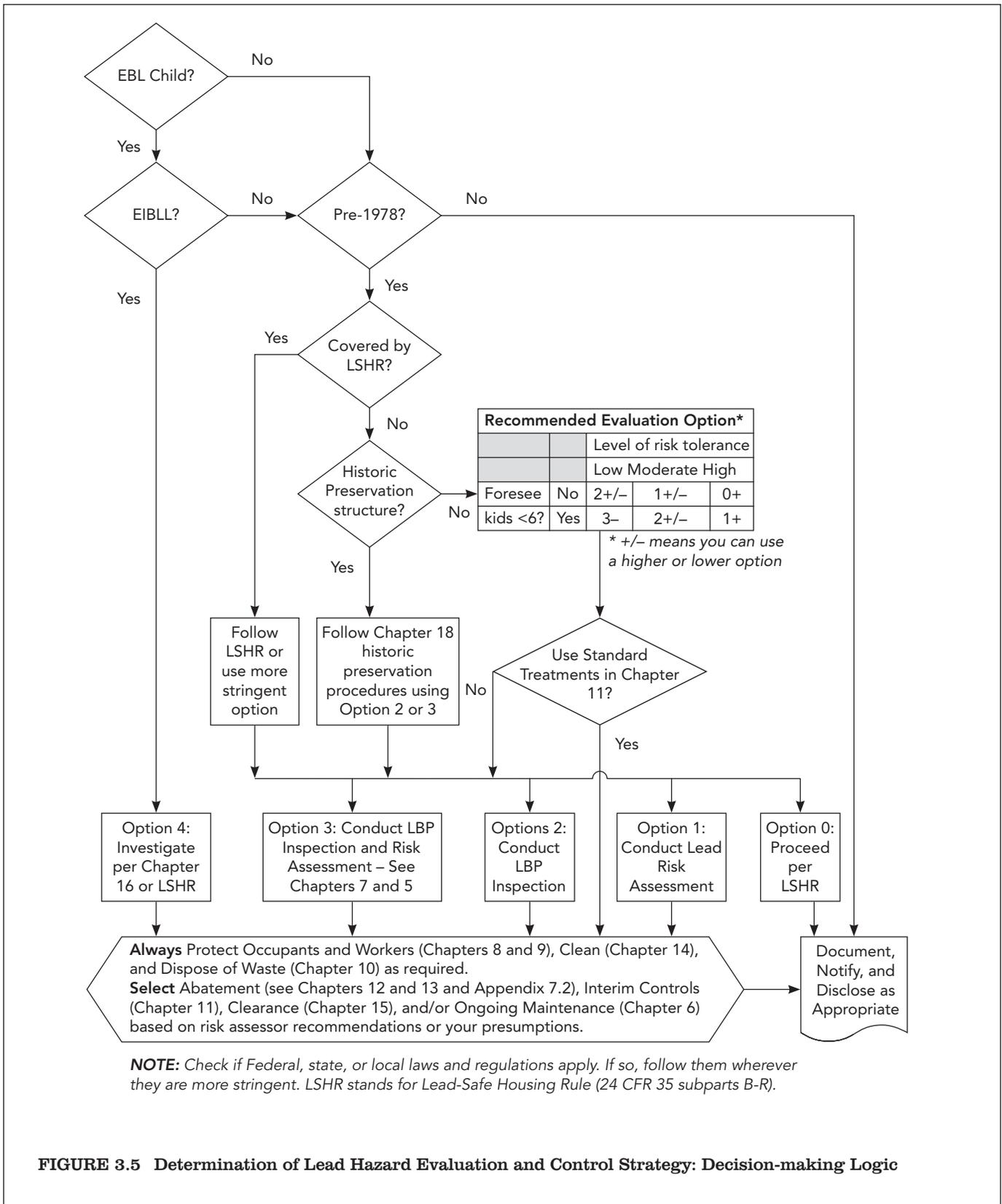


FIGURE 3.5 Determination of Lead Hazard Evaluation and Control Strategy: Decision-making Logic

Unless prescribed by Federal, State, or local law, decisions on prioritizing are the responsibility of the owner and will need to be made on a case-by-case basis. This flexibility should provide the foundation for keeping costs as low as possible. The prioritized schedule should be documented in a lead hazard control plan.

IV. Lead Hazard Evaluation – Inspection and Risk Assessment

The review of existing conditions will usually determine whether the property owner should arrange for an inspection to determine the location and concentration of lead in painted and varnished surfaces or a risk assessment to identify lead hazards. If the property owner is considering abating all lead-based paint in the property, a certified inspector technician should be retained to identify lead-based paint locations and amounts. If no decision as to interim control or abatement has been made, a certified risk assessor should be retained to sample dust and soil and suggest specific interim controls and/or abatement methods to control lead-based paint hazards.

A. Bypassing the Lead Hazard Evaluation Step

In some cases where local laws or regulations prescribe lead hazard control measures or where there is every likelihood that lead-based paint hazards are present, the property owner may decide to forego lead hazard evaluation and proceed directly to lead hazard control. In such cases, the property owner should presume that all painted and varnished surfaces are lead-based-painted components and that all possible lead hazards are present in the unit (and common areas, for multi-family property). Conduct clearance examinations following lead hazard control treatments to insure no hazards are overlooked since the initial evaluation was not performed. When it is likely that only some of the surfaces to be treated contain lead-based paint (as is often the case in homes built after 1960), an inspection or risk assessment may be more cost effective than bypassing this step, since up-front evaluation enables the lead hazard control activities to be more focused. This is due in part to the fact that only a small proportion of interior surfaces will contain lead-based paint.

For properties covered by the Lead Safe Housing Rule, where interim controls are required, the designated party has the option to presume that lead-based paint or lead-based paint hazards or both are present throughout the residential property. In such a case, evaluation is not required. Standard treatments shall then be conducted in accordance with 24 CFR 35.1335 on all applicable surfaces, including soil, in lieu of interim controls of identified hazards. Standard treatments are completed only when clearance is achieved in accordance with 24 CFR 35.1340 (See Appendix 6).

B. Risk Assessment Costs

Risk assessment costs per dwelling unit vary according to the type of housing being studied. The cost per dwelling unit is lower in large multi-family housing than in single-family or small multi-family housing because environmental sampling is not required for every dwelling in large projects (see Chapter 5). For example, for an apartment complex with 200 similar dwellings, only 20 dwellings would have to be entered and sampled for risk assessment purposes, provided that construction and painting histories are uniform throughout the complex. Costs vary depending on local market conditions (see the economic analysis of HUD's Lead Safe Housing Rule at www.hud.gov/offices/lead/library/enforcement/completeRIA1012.pdf).

In the public housing program, about 50 percent of the cost of a risk assessment is attributable to the cost of analyzing environmental samples; the balance consists of activities such as visual assessment, data collection, sample collection, and report writing (HES, 1993). If extensive paint chip or soil sampling is required due to the presence of a significant amount of paint in poor condition, the sampling costs will be higher. Since these conditions can only be determined in the field once the work starts, the risk assessor should provide a separate unit price for collection and analysis of additional samples.

C. Inspection Costs

The cost of inspection depends on the number of surfaces that must be tested, which in turn depends on the number of painted components. A typical 2-bedroom apartment or small house (5 to 7 rooms) has 40 to 80 painted interior components and 5 to 15 exterior components, all of which will need to be tested. A large single-family house may have far more surfaces to be tested, depending on the number of rooms, painted components in each room, exterior components to be tested, and surfaces that require confirmatory laboratory analysis of paint chips. A typical apartment unit or small-to-average single-family house can usually be tested in 2 to 3 hours by one person operating a single X-ray fluorescence (XRF) analyzer. An additional hour for report preparation is typically needed. Using the protocol in Chapter 7 and current XRF technology, it is not possible to inspect units for \$35–\$45, despite claims by some inspectors to the contrary. Owners are advised to examine closely the competence of inspectors submitting bids. In rural areas, travel costs may be added to the inspector's price.

D. Key Elements in a Request for Proposals (RFP) for Risk Assessment and Inspection

Most public agencies are required to advertise publicly an RFP for consultant services, such as risk assessment and inspection, depending on the estimated value of the services. Although this is not a requirement for most private-sector solicitations, it is still advisable to draw up a list of the information that each proposal should include and a list of factors by which different proposals can be competitively evaluated.

A sample RFP for a risk assessment is provided in Appendix 7.1. Such an elaborate proposal is not necessary in situations where agreements can be reached by private negotiation (for example, a risk assessment for a single-family home), but the major elements should still be considered before a proposal is accepted.

E. Monitoring the Risk Assessment/Inspection Process

The owner should monitor the risk assessment or inspection to ensure that all dwelling units and surfaces to be tested are in fact examined. There have been reports of inspectors providing fictitious testing data or skipping surfaces or even entire dwelling units. One way for the owner to ensure that services are delivered properly is to inform the inspector that a third party will repeat some of the testing as a quality control check. Alternatively, the owner can conduct unannounced surveillance of the testing campaign or can accompany the inspector/ risk assessor as the work proceeds (see Chapter 7 for a detailed quality control plan for paint testing).

F. Reviewing the Risk Assessment Report

The contents of a risk assessment report should closely follow the format described in Chapter 5. The risk assessment report should provide clear information on all environmental samples taken and the laboratory results. It should include a section detailing the lead hazard control options (i.e., what the owner should do) for each of the lead hazards identified. For all lead hazard control methods except complete lead-based paint removal (via building component replacement or paint removal), a plan for ongoing monitoring and professional reevaluation should be described (see Chapter 6). Also the report should explain precautions needed to avoid creating additional lead hazards in the future. A list of hazards with attached laboratory results is not an adequate risk assessment report.

G. Reviewing the Inspection Report

As discussed in Chapter 7, the inspection report should provide clear and concise information about the amounts and locations of all lead-based paint on the property, its outbuildings and other structures (fences, etc.). The report should state which components contain lead-based paint and which do not. The owner should be able to reconstruct the testing and reconstruct the exact places where paint was tested. It should include documentation demonstrating that the testing work was done in conformance with the protocols in Chapter 7 and the inspector's certification information and signature. The report should contain in the body or as attachments, schematic floor plans for each unit or area indicating exact test locations, all raw measurement data, and the results after averaging and correction for substrate interference (if applicable). The report should document that an acceptable sampling scheme was followed. A table of confirmatory paint chip test results and a summary table that shows the percentage of each component testing positive, negative, and inconclusive (multi-family housing only) should be included. The decision-making rules for classifying all surfaces in a dwelling (as outlined in Chapter 7) should be explained and applied properly. The information that the owner must disclose should be identified. Finally, the report should include any recommendations for further testing. A cover sheet with attached XRF results is not an adequate inspection report.

V. Considerations in Selecting Control Methods

This section summarizes factors that should be considered in the selection of lead hazard control methods or before starting a renovation, repair or painting job that will disturb lead-based paint. (Specific techniques and the advantages and disadvantages of each type of lead hazard control are described in Chapters 11, 12, and 13). Before implementing the control measures, whether they be abatement or interim controls, decisions must be made regarding protective measures, the degree of containment (to protect residents), worker protection, cleaning and clearance, and waste management.

A. Containment and Resident Protection

Resident protection is an essential component of all lead hazard control work conducted in occupied units. Containment is also required to prevent dispersal of lead into soil or nearby dwellings. These measures are implemented by selecting one of the Worksite Preparation Levels described in Chapter 8. The Worksite Preparation Level should be defined in the project specifications. If there are no specifications, the certified contractor can select the level. The contractor and the property owner share responsibility for ensuring that a proper containment is maintained for the type of activity

performed. In all circumstances, residents and pets must never be permitted to enter the work area while work is underway. In some cases lead hazard control work can take place if the residents leave for the day or do not enter the work area until cleanup and clearance have been completed.

B. Worker Protection

The Occupational Safety and Health Administration (OSHA) regulations require that workers be protected whenever they are exposed to airborne leaded dust above certain levels or are performing certain construction tasks (29 CFR 1926.62) (See Appendix 6). (Maintenance work not associated with construction activities is covered by 29 CFR 1910.1025.) Many states have their own occupational safety and health programs approved by OSHA. These state plans must have job safety and health standards that are at least as effective as the corresponding federal standards. As of 2011, 28 states and jurisdictions had complete State Plans covering both the private sector, and state and local government employees; and 5 covered public employees only (<http://www.osha.gov/dcsp/osp/index.html>). (Federal employees are covered exclusively by OSHA.)

At this time no lead hazard control technique (even encapsulation or enclosure) is automatically exempt from worker protection requirements. However, it is possible for employers to show that some of the requirements are not applicable by generating objective data from jobs in similar housing using corresponding methods with the same workers. Unless monitoring is completed showing that airborne lead levels are well below Federal or state exposure limits, abatement workers should wear half-mask respirators fitted with the correct HEPA filter for leaded dust particles and protective clothing, exercise proper personal hygiene (preferably onsite showers), and undergo medical surveillance. These measures will also prevent workers from taking home leaded dust on their shoes and work clothing, where their own children could be exposed. Some of these protective measures may not be necessary for low-level interventions (wet cleaning, for example). HUD's interim controls training curricula recommend a minimum of N-100 respirators for maintenance and interim controls workers. The cost of meeting occupational safety and health requirements must be taken into account in any lead hazard control effort. Chapter 9 provides further guidance on implementing the OSHA lead construction standard in the housing industry.

C. Cleanup and Clearance Requirements

The lead hazard control method selected will determine the extent of the cleanup required. For jobs that generate very low amounts of lead dust, careful wet cleaning alone may suffice. For most interim control and abatement jobs, a HEPA vacuum cleaning, followed by a wet wash, and final cleaning with the HEPA vacuum, is the best way of meeting clearance standards. For jobs generating more leaded dust, one or more HEPA/wet wash/HEPA cycles may be required (see Chapter 14).

Check your work carefully for lead dust because hazardous amounts may be minute and not easily visible. If you see any dust or debris, then re-clean the area.

EPA regulations (for pre-1978 target housing and pre-1978 child-occupied facilities) and/or HUD regulations (for pre-1978 target housing receiving HUD assistance) address how, after the substantive work of the project has been completed, and all visible dust and debris have been cleaned up, to determine whether the project has been conducted in a way that allows the work area to be released to residents:

- ◆ For abatement projects, a visual evaluation and dust sampling and analysis of the dust (“clearance testing”) demonstrating that no lead hazards remain in the work area have been completed are required. (This EPA requirement is explicitly incorporated into HUD’s Lead Safe Housing Rule (LSHR).)
- ◆ For non-abatement projects covered by HUD’s LSHR, a visual evaluation and clearance testing are required, except for paint disturbances of very small, “*de minimis*,” amounts (e.g., 2 square feet per room).
- ◆ For non-abatement projects covered by the EPA’s RRP Rule but not HUD’s LSHR, clearance is not required by EPA, but EPA’s “cleaning verification” procedure is, except for paint disturbances of small, “minor repair and maintenance” amounts (e.g., 6 square feet per room). HUD recommends clearance for these projects.

See Chapter 6 regarding the rules discussed above.

If work was not completed, if visible dust or debris remains, or if an excessive amount of leaded dust remains, additional work and cleanup are required until final clearance is achieved (see Chapter 15 for more detailed information on the clearance process). If clearance or cleaning verification, as applicable, show that all work was performed satisfactorily and that leaded dust is not present above clearance standards, then the area can be considered to be safe for residents.

On jobs covered by EPA’s RRP Rule but not HUD’s Lead Safe Housing Rule, certified renovators must perform a final clean-up check. They must use disposable white cleaning cloths to wipe the window sills or the work area floor (in 40 square foot segments) and compare them to a gray cleaning verification card to determine whether the work area was adequately cleaned. If the cleaning cloth is cleaner than the example cleaning cloth on the cleaning verification card, then that surface section has been adequately cleaned. If not, the contractor must re-clean that surface section and conduct another cleaning verification. If the second cloth is not cleaner than the cleaning verification card, the contractor waits for 1 hour or until the surface section has dried completely, whichever is longer. Then the certified renovator wipes the surface section with a dry electrostatic cleaning cloth, and EPA considers the surface clean. (See EPA’s brochure, [Steps to LEAD SAFE Renovation, Repair and Painting; www.epa.gov/lead/pubs/steps.pdf](#).) To order a cleaning verification card and detailed instructions visit EPA’s website at [www.epa.gov/lead/pubs/renovation.htm](#) or contact the National Lead Information Center at 1-800-424-LEAD (5323); hearing- or speech-challenged individuals may access this number through TTY by calling the toll-free Federal Relay Service at 800-877-8339.

At the end of a HUD-funded non-abatement job disturbing paint of more than the Lead Safe Housing Rule’s *de minimis* amounts, a clearance examination is conducted to document that the area is safe to be reoccupied and cleaning was adequate. (Chapter 15 explains clearance requirements.)

D. Waste Disposal

In 2000, EPA clarified its policy with respect to the status of waste generated by contractors as well as residents from lead-based paint activities conducted in households (household waste) (EPA, 2000b). The clarification provided that the household waste exemption in the Resource Conservation and Recovery Act (RCRA) applies to waste generated by contractors as well as to waste generated by residents. The household waste exemption applies to all lead-based paint activities, including abatement, interim control, renovation, and remodeling of housing. Types of

housing included in the household waste exemption are single-family homes, apartment buildings, public housing, and military barracks. In 2003 EPA amended its solid waste regulations to codify this policy by issuing two new definitions for “construction and demolition (C&D) landfill” and “residential lead-based paint waste” (EPA, 2003). A summary fact sheet is available through EPA’s municipal solid waste web site at www.epa.gov/wastes/nonhaz/municipal/landfill/pb-paint.htm.

The cost of waste transport and disposal may be a key factor in selecting hazard reduction methods, particularly because it can significantly affect the project budget. Therefore, check with state and local authorities before final selection of lead hazard reduction activities.

E. Extent of Concurrent Work

Lead hazard control measures will be effective only if components and substrates are structurally sound and in reasonably good condition. Structural deficiencies and any possible sources of water infiltration must also be addressed before lead hazard control activities are undertaken. Cost estimates should clearly reflect these additional requirements.

When the work begins, the contractor may need extensive access to the units, common areas, and worksite. Corridors, stairs, elevators, streets, walkways, and site spaces may have to be used for lead hazard control activities. The existing uses of these spaces may have to be suspended until the work is done. Fire escape routes and exits must never be blocked, however, unless alternative routes are approved by local fire authorities.

Mechanical and electrical fixtures may have to be removed before lead hazard control work can be accomplished. For example, if exterior siding is being replaced, light fixtures, electrical power outlets, cable TV conduits, and telephone and water services may impede the work. If interior walls are being abated, electrical fixtures and radiators may have to be removed.

VI. Considerations in Cost Estimating for Lead Hazard Control

The price for a lead hazard control job will depend on the:

- ◆ Hazard control methods/strategies.
- ◆ Building components being treated.
- ◆ Extent of the work.
- ◆ Location of the job.
- ◆ Individual circumstances of the job.

A. Type of Dwelling Unit

Overall, lead hazard control cost depends on the type(s) of units being worked on. Multi-family dwelling units are the least expensive because their size is usually limited and the work is highly repetitive. The cost is much lower than for treatment of a detached single-family house, unless common areas, like stairs and hallways, are included.

A common two-story row house is relatively inexpensive to treat because there are no side windows (except in end units). The price will increase if the row house is three stories, since the third floor adds a flight of stairs and two or more additional rooms. Some turn-of-the-century row houses near the urban centers of older cities are quite sizable, particularly in terms of ceiling height and property depth, and have elaborate moldings; this will potentially increase the cost of the treatment.

Semi-detached dwellings, such as duplexes and triplexes, include a bank of windows going down one side of the home and are comparable to an end-unit row house. Overall, this type of residence has more square footage than the standard row house and treatment price will rise accordingly.

Generally, single, freestanding dwellings are the most expensive to treat. Windows are on all four sides and attics, basements, garages, and elevated porches (both front and back) are common. If the exterior is painted, the lead hazard control cost will be relatively high. In addition, when treating multi-family housing, startup and project management costs can be amortized over the larger number of housing units, thus decreasing the cost per housing unit, even when costs for addressing common areas are taken into account.

These general principles have important limitations. All homes are unique and control requirements are specific to the particular dwelling.

B. Number of Building Components and Paint Layers to Be Treated

The number of components being treated will directly affect the cost. Older houses tend to contain a greater number of components for two reasons. First, a smaller percentage of new houses contain lead-based paint. For example, about 24.6% of homes built between 1960 and 1977 contain lead-based paint, while about 86.2% of those built before 1940 do. Second, older homes also have more decorative components, such as crown moldings, chair rails, wainscoting, and carved fireplace mantels, which are more likely to have lead-based paint than walls and ceilings as a whole. (HUD, 2011) In addition, older homes typically contain more coats of paint. Many layers of paint make paint removal more difficult on these components.

C. Types of Items

The types and ornateness of items to be treated will influence costs. For example, it is expensive to treat flights of stairs with spindles, newel posts, handrails, stringers, and skirt boards. Painted kitchen cabinets are also costly to treat. Homes with radiators are more expensive to treat than homes with hot-air registers that can be replaced inexpensively.

Generally, the more ornate the components and the more difficult they are to work with, the higher the cost of the job. For historic properties lead hazard control may be warranted. Generally, replacement of original components is not desirable, nor is their enclosure or encapsulation, since the detail and the integrity of the trim usually must be preserved. Some strippers may damage plaster and soft woods, and the use of heat guns in a historic dwelling can create fire hazards. Methods must be specifically tailored to the unique circumstances of the individual situation. Typically, restrictions are stringent and costs are correspondingly high for these properties (see Chapter 18).

For abatement, a significant portion of the total cost of treatment (perhaps as much as one-third) of ornate single-family housing may be devoted to enclosed porches with window and screen frames; wood panels with framing under the windows; wide porch pillars; painted porch

steps and floors; porch ceilings and support beams; the cornice, soffit, and fascia; fat “vase” styled spindles; wide upper and lower rails; and the exterior side of the front living room windows within the porch enclosure.

D. Wage Rates

As a general rule, labor accounts for two-thirds of the direct field cost in lead hazard control work. Labor-intensive treatments are generally more expensive. Labor rates are typically higher in projects for which federally specified “prevailing wages” are paid under the Davis-Bacon Act and related acts (see the Department of Labor’s (DOL’s) Davis-Bacon and Related Acts website, www.dol.gov/compliance/laws/comp-dbra.htm, the Davis-Bacon wage determinations issued by DOL, posted by the Government Printing Office at <http://www.wdol.gov/>, and, for HUD-assisted projects, HUD’s Office of Labor Relations website, www.hud.gov/offices/olr/).

E. Occupancy Status

If the lead hazard control job, including clearance, is to be performed so that the resident can return to the dwelling unit each night, or is restricted from certain work areas in progress, then the job will be substantially more complicated than one performed on a vacant dwelling. For example, a bathroom and kitchen must be kept available for the residents.

Should the residents move but leave their belongings in the dwelling (to be moved from room to room or covered to prevent dust contamination), the job will also be substantially more expensive than work performed in a vacant dwelling, for three reasons. First, continually moving furniture and personal effects is labor-intensive. Second, liability for breakage, which includes appliances and electronics, must be considered. Third, moving furniture back into a room may reduce the likelihood of readily achieving the very low leaded dust levels necessary for clearance, if required, when the entire house is completed. For all these reasons, it is preferable to undertake major control projects in vacant units whenever possible.

F. Security

Properties in the care, custody, and control of contractors may be the contractors’ contractual responsibility. Security measures may increase the cost of the job if vandalism or theft is a valid concern.

G. Utilities

The absence of utilities (heat, electricity, and water) necessary to perform certain lead hazard control activities should be factored into the cost of the hazard control. Dwellings that have been vacant for a long period of time can present special problems. In order for paint-removing chemicals to work, encapsulants to cure, and adhesives to dry, the property must have heat in cold weather. If home heating units are not functioning or are missing, then either expensive repairs need to be performed or potentially costly alternatives considered.

Electricity is required for the operation of power tools, HEPA vacuums, and heat guns. Restoring wiring or providing new electrical service to the property is expensive. Using portable generators is often insufficient and inefficient and presents a capital expense and maintenance cost.

Water is required for worker cleanup and for achieving compliance with clearance standards. It would be inconvenient and expensive to transport large quantities of water to and from the property. Water may have to be hauled away if waste systems are not functioning because it cannot be poured into the ground. Discharge must always be coordinated with local water treatment authorities.

H. Clearance and/or Cleaning Verification

As a job is completed, clearance or cleaning verification by an appropriately certified individual is always appropriate and is required for most projects. Downtime caused by delayed cleaning verification, clearance testing, or receipt of clearance results from a laboratory can be costly; proper scheduling is essential.

I. Site Access

Whatever the site, access must be arranged for workers and equipment. Contractors should ensure, prior to the start of the job, that workers have access to the worksite, such as elevators in high-rise buildings. Similarly, in a housing development, the contractor's trucks should have close access to the dwelling units treated.

J. Job Design in Large Buildings

Lead hazard control in large multi-family buildings must be carefully planned to permit efficient phasing of the work. Initially, the owner should plan to set aside available dwelling units for lead hazard control during vacancy turnover. It is likely that the first wave of work will be scattered throughout a housing development or various floors of a multi-family building. Thereafter, these abated vacant units should be filled with residents from a single floor or housing block. It is critical that family size and housing size be matched. The job should then progress in a linear path, from floor to floor and block to block. The residents thereby retain the same neighbors and are not relocated to new areas that affect transportation, merchant relationships, day-care facilities, and school access.

The job can then be executed in a controlled and economical way that saves money and consolidates workers in a given area. Working floor by floor in multi-family housing also mitigates residents' concerns and logistics over worker contamination of common areas.

K. Waste

Costs associated with waste disposal can be substantial. See Section V of this chapter for further details.

L. Other Costs

The following factors can also increase the cost of performing a lead hazard control job:

- ◆ Poorly defined terms and work items, and illogical work sequencing through the dwelling, resulting in missed items and treatment of incorrect items.
- ◆ Delays in resident departure.

- ◆ Dwelling insufficiently cleared of trash and belongings.
- ◆ Weak floors, stairs, or other structural components.
- ◆ Delayed fumigation (if required).
- ◆ Inexperience of personnel.

VII. Specifications

The property owner should consider whether a detailed set of specifications is needed. For most single-family homes, a detailed set of specifications may not be appropriate. However, for large multi-family housing projects, carefully prepared specifications can help prevent confusion in bidding and job completion. It is beyond the scope of these *Guidelines* to provide a model set of specifications that can be tailored to specific properties. However, examples of project specifications are provided in Appendix 7.3. These guide specifications must be tailored to the conditions and project goals and approaches applicable to each individual job.)

VIII. Pilot Projects

The methods of abatement and interim control in these *Guidelines* have been found to be generally safe and effective. Pilot projects can be used to answer a variety of questions, such as whether hazardous waste will be involved, encapsulants will be effective, paint removers will actually work, and excessive levels of dust will be generated, at a particular site. Pilot projects test lead-based paint hazard control strategy on a limited number of dwellings, usually those that are vacant, to determine the feasibility of carrying out such a strategy in the entire multi-family housing development. This usually involves a variety of lead-based paint hazard control treatments that are under consideration for the overall project. Pilot projects are most appropriate when a large-scale multi-family project is being considered and whenever there is uncertainty about the safety and effectiveness of a particular lead hazard control process.

In pilot projects a representative portion of the total project is carried out and carefully evaluated. The pilot project work should be performed as closely as possible to the way the larger project will be performed, including carrying out specific lead hazard control work, scheduling activities, and integrating other work. This type of pilot study should be evaluated by a risk assessor along with environmental sampling to document that the work is being adequately controlled. Pilot projects should be performed in vacant units whenever possible.

IX. Coordinating Lead Hazard Control Work with Other Renovation Work

Lead hazard control work should be coordinated with other renovation work performed as part of the same project (see Chapter 4). For abatement work it is generally preferable, and sometimes necessary, to complete the abatement work *before* all other renovation work. This may permit most of the construction work to be done in a traditional way without extensive worker protection. For example, it would be necessary to remove lead-based paint from certain surfaces in a kitchen or bath before attaching new fixtures or cabinets. This approach simplifies coordination of the subsequent construction work, since renovations are not started until the lead hazard control is complete.

However, for some projects it may be difficult to separate lead hazard control and renovation. In such cases the role of the abatement or interim control contractor may have to be expanded to include general carpentry and other construction activities. Contractors which will be disturbing lead-based paint during the renovation work must be certified renovation firms under EPA's Renovation, Repair, and Painting (RRP) Rule (see Appendix 6), unless the work is abatement (see Chapter 12) or the amount of paint to be disturbed falls within EPA's minor repair and maintenance limits (see Appendix 6). Certified renovation firms, the certified renovators who supervise the projects, and the workers who implement them, must meet EPA or State lead safety requirements. Alternatively, the work of certain trades may have to be done under abatement conditions. For example, for removing and replacing a window and attached trim covered with lead-based paint because the paint is deteriorated, an abatement worker with carpentry skills is valuable. Similarly, in a situation where there is lead-based paint on interior walls and ceilings, it may be more efficient for an electrician to use lead-safe work practices (see Chapter 11) rather than have an abatement contractor remove paint from walls and ceilings.

X. Insurance

Standard insurance policies almost always contain a strict pollution exclusion clause and, therefore, do not cover lead-based paint-related activities. Lead liability insurance has been readily available for several years covering lead-based paint inspection, risk assessment and abatement work. See Appendix 9 for guidance to property owners on the purchase of liability insurance against lead-based paint-related claims. Note that the Lead Safe Housing Rule requires public housing agencies to carry lead-based paint liability insurance for pre-1978 public housing (see 24 CFR 965.215).

XI. Project Completion

No interim control or abatement project is complete until compliance with clearance standards has been achieved, if required, and a final report prepared.

These reports will become an important document that should be transferred from one owner to the next as part of the lead disclosure requirements under Title X. Some jurisdictions may also require that certificates be provided to owners as proof of completion of lead hazard control work; these will also become part of the disclosure record. Owners and clearance examiners are responsible for maintaining such records.

A. Clearance and/or Cleaning Verification

The abatement or interim control work area generally cannot be released to residents until a visual evaluation has been passed and it has been demonstrated that no lead hazards remain in the work area. As discussed in Section V.C, above (and detailed further in Appendix 6):

- ◆ For non-abatement projects covered by the EPA's RRP Rule and not HUD's LSHR, the visual inspection and EPA's "cleaning verification" procedure are required except for small, "minor repair and maintenance projects."
- ◆ For non-abatement projects covered by HUD's LSHR, the visual inspection and clearance are required except for paint disturbances of very small, "*de minimis*," amounts.

For abatement work, EPA requires that an abatement report must be prepared by certified abatement supervisor or project designer to document the work and the control measures used, including the results of clearance testing and all soil analyses (40 CFR 745.227(e)(10)). The abatement report should be provided to the person who contracted for the work and, if different, the property owner.

For interim control work for which HUD requires clearance under the LSHR, a similar clearance report must be prepared (24 CFR 35.1340(c)); it should be provided to the person who contracted for the work and, if different, the property owner. In addition, a notice to occupants of hazard reduction activity (with information specified in 24 CFR 35.125(b)) must be provided within 15 calendar days after the hazard reduction work has been completed.

For non-abatement projects covered by the EPA's RRP Rule and not HUD's LSHR, if dust clearance sampling is performed instead of cleaning verification, the renovation firm must provide a copy of the dust sampling report to the person who contracted for the renovation sooner than 30 days after the renovation has been completed.

B. Final Report

A final report should be prepared by the professional who conducted the clearance examination or, if clearance is not conducted, such as when cleaning verification is conducted, by the project supervisor, to document the work and any ongoing monitoring and professional reevaluation that may be required in the future by the owner. If applicable, the date for the next reevaluation by a certified professional should appear in the report.

References

CPSC, 2009. Interim Enforcement Policy on Component Testing and Certification of Children's Products and Other Consumer Products to the August 14, 2009 Lead Limits, 74 FR 68593, December 29, 2009.

<http://www.cpsc.gov/businfo/frnotices/fr10/comppol.pdf>

EPA, 2003. U.S. Environmental Protection Agency, Criteria for Classification of Solid Waste Disposal Facilities and Practices and Criteria for Municipal Solid Waste Landfills: Disposal of Residential Lead-Based Paint Waste, Final Rule, *Federal Register* 68(117) 36487-36495: June 18, 2003. Accessed 11/18/2011 through

<http://www.gpo.gov/fdsys/pkg/FR-2003-06-18/pdf/03-15363.pdf>.

HES, 1993. Housing Environmental Services, Personal communication from Miles Mahoney on typical findings of risk assessments in public housing, Columbia, Maryland, 1993.

HUD, 2001a. U.S. Department of Housing and Urban Development, National Survey on Lead and Allergens in Housing, Final Report, revision 6, April, 2001. <http://www.nchh.org/Portals/0/Contents/Article0312.pdf>

HUD, 2011. U.S. Department of Housing and Urban Development, American Healthy Homes Survey: Lead and Arsenic Findings. April 2011. http://portal.hud.gov/hudportal/documents/huddoc?id=AHHS_REPORT.pdf

President's Task Force, 2001. President's Task Force on Environmental Health Risks and Safety Risks to Children, *Eliminating Childhood Lead Poisoning: A Federal Strategy Targeting Lead Paint Hazards*, 2001.

<http://www.hud.gov/offices/lead/library/hhi/FedLeadStrategy2000.pdf>