

**Evaluating and Controlling Lead-Based Paint Hazards: A Guide for Using
EPA's Lead-Based Paint Hazard Standards**

Public Review Draft

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Preface to the Public Review Draft

This guidance document is intended to provide advice to the public on how to use the lead-based paint hazard standards. The document is broad in scope and is primarily intended for risk assessors: state, tribal, and local officials; owners and managers of large multifamily properties; training providers; and other individuals who routinely deal with issues related to lead-based paint hazard evaluation and control. EPA recognizes, however, that some of the information contained in this document will be of interest to other groups including owner occupants of single family housing, owners of small rental property portfolios, and training providers.

This purpose of this draft is to obtain public comment on the substance of EPA's recommendations. The Agency is also asking commenters to make recommendations on which sections of this document, if presented in a user-friendly format, would be useful for other members of the public such as owner occupants. EPA will consider all comments received when it finalizes this guidance document. As part of this process, the Agency will revise the text to make it more readable and reformat the document to make it easier to find information. EPA will issue final guidance when it promulgates the final section 403 regulation.

Introduction

In accordance with TSCA section 403, the U.S. Environmental Protection Agency (EPA) has promulgated a rule identifying lead-based paint hazards. These standards identify the conditions and/or levels of lead in paint, dust and soil that present risks to young children. These standards are intended to be used prospectively. That is, the standards are designed to identify sources of exposure before children are exposed and possibly injured. The direct effects of the standards are limited to supporting the implementation of other provisions of Title X -- "The Lead-Based Paint Hazard Reduction Act of 1992." These provisions include hazard disclosure, identification and control of hazards for federally-assisted and federally-owned housing, establishment of criteria for risk assessors to use when conducting a lead-based paint risk assessment, and a standard to determine when an activity is an abatement and certified workers and firms are required.

The section 403 regulations do not require property owners to conduct hazard evaluations or respond to hazards as identified in the rule. EPA recognizes, however, that many property owners and prospective purchasers will undertake hazard evaluation and control activities to protect the health of children, to reduce or eliminate liability exposure, to comply with requirements that apply to federally-assisted and federally-owned housing, or in response to other factors and considerations. The section 403 rule provides objective criteria for identifying lead-based paint hazards. Another document, the Department of Housing and Urban Development's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, provides detailed instructions on how to conduct lead-based paint activities, including inspections, risk assessments, abatements, interim controls, cleanups, and clearance testing. Neither the regulations nor the HUD Guidelines provides advice on when to evaluate properties for lead-based paint hazards and how to respond to the findings of a hazard evaluation.

The purpose of this document is to fill this void by providing advice and recommendations on: (1) whether to conduct a hazard evaluation, (2) when to conduct a hazard evaluation, (3) how to interpret the results, and (4) how to respond to hazards and contamination that are identified. This guidance is intended for all individuals who may routinely have to make decisions concerning lead-based paint hazard evaluation and control, including certified risk assessors, state and local housing and public officials, and owners and managers of large multifamily housing portfolios.

The document is divided into six sections: this introduction, a background section that summarizes the TSCA section 403 standards and describes hazard evaluation and control activities, and four sections that correspond to the four topics described above on evaluating properties and responding to hazards. The third section addresses the question of whether a property owner should have his/her property evaluated for the presence of lead-based paint hazards. Section four provides advice on the timing of an evaluation. Section five explains how to interpret the results of a hazard evaluation. The last section presents EPA's recommendations on how to respond to lead-based paint hazards and a soil-lead level of concern.

Background

This section of the guidance document summarizes the TSCA section 403 regulation and briefly describes hazard evaluation and control activities. The TSCA section 403 regulation identifies lead-based paint hazards. Lead-based paint hazards consist of hazardous lead-based paint, dust-lead hazards and soil-lead hazards. Hazardous lead-based paint is lead-based paint in poor condition (>10 ft² of deteriorated paint on exterior components with large surface areas, >2 ft² of deteriorated paint on interior components with large surface areas, or deteriorated paint on > 10 percent of the total surface area of exterior or interior components with small surface areas). A dust-lead hazard is lead in surface dust in a residential dwelling that equals or exceeds 50 µg/ft² on uncarpeted floors or 250 µg/ft² on interior window sills. A soil-lead hazard is lead in bare residential soil that equals or exceeds 2000 parts per million (ppm)

The preamble to the proposed TSCA section 403 regulation discussed a second standard for soil known as a soil-lead level of concern. Based on EPA's analysis, the Agency determined that the soil-lead level of concern should be 400 ppm. Lead-based paint hazards indicate that it is worthwhile for property owners to take steps to eliminate the hazards. A soil-lead level of concern, while not a lead-based paint hazard, indicates that there is likely to be at least a small risk to young children living at the property and less costly actions should be taken. Because the soil-lead level of concern does not trigger or affect the implementation of any other regulatory provision under Title X, EPA did not include this level in regulation. It is only a guidance level.

The dust standards are loading measures which shows the mass (weight) of a lead collected in a given area. In this case the measure shows micrograms of lead per square foot of uncarpeted floor or interior window sill. EPA chose to use a loading standard because most risk assessors use the wipe method to collect dust samples, which yields only a loading value. In the wipe method, the risk assessor uses a wet wipe (e.g., baby wipe) to collect dust from an area on a floor or window sill. Some risk assessors, however, may use a vacuum technique which provides results in terms of loading and concentration. The concentration of lead in dust is a measure of the relative content of lead in the sample of dust described in terms of micrograms per gram or parts per million by weight. The Agency will provide guidance on the use of concentration data in a separate document entitled "TSCA Section 403: Sampling Guidance for Identifying Lead-Based Paint Hazards."

There are three types of investigations with respect to lead-based paint: inspections, risk assessments and lead hazard screens. A lead-based paint inspection is a surface-by-surface examination of residence to determine the presence and location of lead-based paint. An inspection does not identify lead-based paint hazards and, therefore, is not considered a hazard evaluation. Risk assessments and lead hazard screens are hazard evaluations. A risk assessment is an on-site investigation to identify and report the existence, nature, severity, and location of lead-based paint hazards. A risk screen is basically an abbreviated risk assessment used to rule

out the presence of lead-based paint hazards. The findings of both risk assessments and lead hazard screens are presented in a written report, which describes the location, type and severity of lead-based paint hazards and makes recommendations for addressing these hazards. EPA issued a regulation in August 1996 (as amended by the section 403 rule) that established work practice standards for these three investigations. (40 CFR 745.227)

A risk assessment includes a visual inspection of paint and testing to determine if paint that is in poor condition is lead-based. This testing is usually done using a hand-held device called a X-Ray Fluorescence (XRF) instrument. If, based on XRF measurement, the risk assessor cannot conclusively determine if the paint is lead-based, he/she will collect paint chip samples and send them to a laboratory for analysis. The risk assessor will also collect dust and soil samples and send them to a laboratory for analysis.

A risk assessor may use one of two approaches for dust sampling: single surface sampling or composite sampling. For single surface sampling, the risk assessor collects a sample from one area of a floor or a window sill and has that sample analyzed to determine the lead loading. The second approach is composite sampling in which the risk assessor collects samples from several areas on a floor, floor samples from several rooms, or several windows sills and has the samples analyzed together. The result is an average loading for all subsamples in the composite. Single surface sampling provides more information about where specific levels of dust are found in a house but has higher costs than composite sampling because a greater number of samples have to be analyzed by a laboratory. Composite sampling, on the other hand, provides less information because the result is single average rather the specific loadings for specific locations.

EPA's work practice standards for risk assessments require risk assessors to collect two soil samples, one from the dripline (the land immediately next to the building foundation) and the middle of the yard (mid-yard). The risk assessor will identify areas in the dripline and in the mid-yard from which to collect the samples. If there is no soil in the dripline (e.g., area is paved), the risk assessor will collect a sample from bare soil as close to the building as possible. Because the standard refers to bare soil, soil sampling must be collected where the soil is bare.

Evaluating Hazards

Should an owner evaluate a property for lead-based paint hazards and/or a soil lead level of concern?

Any residence or child-occupied facility can contain lead-based paint hazards and/or a soil-lead level of concern. Only a certified risk assessor conducting a lead hazard screen or a risk assessment in accordance with the work practice standards at 40 CFR 745.227 can determine if such conditions are present. The available national data on residential lead-based paint, residential dust, and residential soil suggest, however, that most properties covered by the

standards do not contain hazards or a soil-lead level of concern. Consequently, it is questionable as to whether risk assessments should be conducted at all properties. Furthermore, EPA recognizes that as a practical matter, risk assessments are unlikely to be conducted in all target housing (i.e., most pre-1978 homes). Therefore, the Agency recommends that property owners consider a number of factors that may indicate that lead-based paint hazards and/or a soil-lead level of concern are more likely to be present.

The two major indicators of lead-based paint hazards are the age and condition of a property. In general, newer homes are less likely to contain lead-based paint hazards. This characterization is supported both by data on lead in residential environments and national blood lead data. In addition, well maintained properties are less likely to contain lead-based paint hazards. Well maintained properties have little or no deteriorated paint, which can be ingested by a young child. Properties with little or no deteriorated paint are also likely to have lower levels of lead in dust.

It is possible, however, for older homes to be free of hazards and newer homes to have hazards. Therefore, property owners should consider other information when deciding whether to conduct a risk assessment. Important considerations include community-based factors such as children with elevated blood lead levels and dust and soil-lead levels in neighboring properties. Recent events such as the deleading of a steel structure (e.g., highway bridge, water tower) or the demolition of a house can contaminate nearby properties. In addition, a renovation or remodeling project within the residence or common areas could have generated a dust-lead hazard and may warrant a risk assessment.

The presence of young children or pregnant women is also a factor that property owners should consider. If young children do not live at a residence or spend a significant amount of time at a residence, there is no immediate concern and a risk assessment is probably not necessary. In the case of rental property, the absence of young children is not a significant factor because a residence that currently has no children may be rented to a family with children at the next turnover of the unit.

It should be noted that a lead hazard screen is a less expensive alternative to a risk assessment that should be used only when a property owner has a strong reason to believe that lead-based paint hazards do not exist. If a lead hazard screen fails to rule out the presence of lead-based paint hazards, a risk assessment would be needed to confirm the finding of the lead hazard screen and to identify the location and severity of hazards. The property owner would then incur the cost of both the risk screen and the risk assessment.

When should a property owner conduct a risk assessment?

In general, the best time to conduct a risk assessment is at the time of unit turnover when a residence is vacant. EPA makes this recommendation based on the presumption that a property owner will want to control identified hazards. Hazard control measures can be implemented more easily, more effectively, and less costly in a vacant unit than in an occupied unit. It is also safer to implement control measures in a vacant unit. This recommendation is consistent with the joint EPA/HUD hazard disclosure requirements that became effective in September and December 1996 (40 CFR 745 Subpart F or 24 CFR 35 Subpart H) which provide prospective buyers with the opportunity to conduct a risk assessment. It is also consistent with the Federal advisory task force on lead hazard reduction and financing's recommendation that owners of rental property who choose to conduct risk assessments, should do so at unit turnover.

There are many circumstances, however, where this recommendation would not be appropriate. Three of the more common situations are : (1) a family with or expecting the arrival of a young child(ren) (i.e., younger than six) that purchased a home prior to the disclosure requirements; (2) a rental unit that has not had a turnover in 18 months; (3) common areas in multifamily residential buildings where turnover is not applicable, and (4) multifamily properties where the property owner or manager wants to conduct a risk assessment for the entire property.

A family with or expecting the arrival of a young child(ren) that purchased a home prior to the disclosure requirements would not have the opportunity to wait until turnover. In this situation, the property owner should consider performing a risk assessment as soon as practicable if the factors identified above (e.g., age, condition of property, community-based factors) indicate that a risk assessment is advisable.

The second situation covered by this guidance document is a rental unit where turnover does not occur within 18 months and where children under age six reside. Although turnover rates in rental housing are high (roughly one-third to one-half of rental units turnover annually), some units remain occupied for several years, leaving any hazards that are present unidentified and young children at continued risk of exposure. EPA recommends that owners of such units conduct a risk assessment if risk factors indicate that there is an increased likelihood that lead-based paint hazards exist. The same recommendation applies to common areas (e.g., hallways, laundry rooms, play rooms, game rooms) in multifamily residential buildings where turnover is not applicable because the building is continuously occupied.

In the fourth situation, a property owner or manager may decide to take advantage of the economies of scale that an assessment of an entire multifamily property offers (e.g., sampling conducted in a limited number of units rather than every unit). Because all units do not turnover simultaneously, some units where sampling needs to be conducted will be occupied. Property owners, therefore, should have a risk assessment conducted if risk factors indicate that there is an

increased likelihood that lead-based paint hazards exist within 18 months (the same recommendation that applies to units where turnover has not occurred within 18 months and to common areas).

Should an owner have their property reevaluated?

Risk assessments and the lead-based paint hazard standards are intended to identify conditions that are currently lead-based paint hazards. In many cases, however, there may be no hazards currently but the potential for hazard to develop could exist. For example, intact lead-based paint is not a hazard but it may deteriorate over time creating hazards in the future. As paint deteriorates, it can also contaminate dust and soil with lead, possibly resulting in dust-lead and soil-lead hazards. In other situations, an owner may abate identified lead-based paint hazards but leave lead-based paint in place. Again, the intact lead-based paint could deteriorate over time, possibly creating lead-based paint hazards. Therefore, unless an owner abates all lead-based paint (whether or not it is hazardous), dust-lead hazards, and soil-lead hazards, reevaluation of a property is advisable.

Chapter 6 of the HUD Guidelines provide a comprehensive schedule for reevaluation depending on the findings of the original risk assessment and hazard control actions performed by the owner. If a risk assessor does not identify lead-based paint hazards and the property is free of lead-based paint as confirmed by a lead-based paint inspection, reevaluation would not be necessary. Annual visual examinations by the owner would also be unnecessary. If a property has lead-based paint and hazardous lead-based paint but not dust-lead or soil-lead hazards, the HUD Guidelines recommend that the property be reevaluated in four years if hazards are abated but lead-based paint remains in place. The owner should also conduct an annual visual examination. If no hazards are identified during reevaluations, no further risk assessments are necessary but annual visual examinations should continue. In the case of owner-occupied housing, property owners may wish to continue with periodic reevaluations only as long as children under the age of six are present.

Understanding the results of a risk assessment

This section of the guidance document provides advice on how to interpret the results of the paint, dust, and soil evaluations that comprise a risk assessment.

Understanding the results of the paint evaluation

A risk assessment includes a component-based examination of the condition and lead content of paint. The risk assessment report should identify the components in a residence where

hazardous lead-based paint was identified. Consequently, the presence of hazardous lead-based paint does not mean that all the paint at a property is hazardous lead-based paint. Only lead-based paint in poor condition on a component (e.g., baseboard in the living room, bathroom ceiling) is a hazard. Hazardous lead-based paint may be extensive (i.e., present in practically every room and on the exterior of the property) or it may be limited to few components in one room. Consequently, it is important to review the details of the risk assessor's report to ascertain where hazardous lead-based paint is present. Merely knowing that a home or child-occupied facility has hazardous lead-based paint provides little practical information to property owners and other decision makers on the location, scope, and severity of the problem.

Understanding the results of the dust evaluation

The risk assessment report should provide the results of all dust testing as well as a determination as to whether a dust-lead hazard is present. Testing results will include dust-lead loadings on uncarpeted floors and interior window sills, the location of the samples, and the type of samples (i.e., composite, single surface). The risk assessors will make separate hazard determinations for floors and sills. A dust hazard standard for a type of surface (floors, window sills) exists if the average of all samples for the surface type equals or exceeds the standard for that type.

Unlike a finding of hazardous lead-based paint which applies to specific components, a determination that a dust-lead hazard is present applies to a surface type, not to an individual component. The risk assessor, however, can examine the results of individual samples to determine if dust-lead levels are relatively uniform or vary, with some locations having elevated levels and other locations having acceptably low levels. Such information would enable the risk assessor to design a hazard control strategy that focuses on specific parts of a residence rather than the entire home. For example, the results of dust sampling may show that dust-lead levels are elevated in the kitchen and bathroom but low elsewhere in the residences, suggesting that response actions could be limited to the kitchen and bathroom. As noted previously, single surface samples enable a property owner to identify specific locations where dust-lead levels are elevated. Composite samples, because they already provide an average level, are of limited value in this respect.

Understanding the results of the soil evaluation

The risk assessor will ordinarily collect two composite soil samples: one from bare soil in the dripline (i.e., the area adjacent to the foundation of the building) and one from bare soil in the middle of the yard. The risk assessor will then compare the average of the two results to the soil-lead hazard standard and the soil-lead level of concern to determine if a soil-lead hazard or a soil-lead level of concern is present. As is the case with dust, it is important to examine the results of each of the composite samples to identify the location of lead contamination. For many if not

most properties, the highest lead levels will likely be found in the dripline. Lead levels in the mid-yard are usually much lower.

Responding to the Risk Assessment Findings

Paint

A risk assessment may show that no lead-based paint is in poor condition or that the property contains hazardous lead-based paint. If no lead-based paint is in poor condition, no immediate action with respect to the paint is necessary. Because the risk assessor only tests paint that it is in poor condition, it cannot be concluded from the risk assessment that the property does not contain lead-based paint. To be safe, therefore, the owner should conduct regular visual inspections to ensure that the paint remains in good condition unless a certified lead-based paint inspector has determined that the property is free of lead-based paint. Furthermore, EPA recommends that the owner repair small amounts of deteriorated paint (unless determined not to be lead-based) that were too small to meet the criteria for paint in poor condition.

If a risk assessment identifies hazardous lead-based paint, the risk assessor will recommend that the paint be repaired or abated. This recommendation should be based on a number of factors including the extent of deteriorated paint, the structural soundness of the component, the appropriateness of repair for a given component, and the preferences and financial resources of the property owner. Paint repair is most easily implemented when the surface with lead-based paint is intact and structurally sound. Furthermore, small amounts of deterioration are probably most quickly and inexpensively addressed through paint repair. If the residence has substantial structural defects or if interior or exterior walls or major components, such as windows and porches, are seriously deteriorated or subject to excessive moisture, abatement is likely to be the more appropriate response.

Because paint abatement activity has the potential to generate large amounts of lead-containing dust, EPA recommends that paint abatement be followed by specialized cleaning. As required by 40 CFR 735.227, clearance testing must be performed following an abatement performed by certified personnel. EPA also recommends that areas where paint repair was performed should be thoroughly cleaned. Although clearance testing is not required following abatements performed by owner-occupants or paint repair that generated paint chips and dust, the Agency strongly recommends such testing be conducted to ensure that the area has been adequately cleaned.

Soil

The approach for addressing soil is somewhat different from that for paint. First, the decision of whether to implement interim controls or abatement depends on the concentration of lead in the soil. In contrast, the risk assessor recommends repair or abatement of paint based on consideration of several factors and professional judgment. Second, the results of soil sampling provide only limited assistance to the risk assessor in determining where in the yard hazard control activities should be targeted. With paint, the risk assessor identifies the specific components where hazards need to be corrected.

The type of response to lead-containing soil (interim measures, abatement) depends on the levels of lead detected in the soil. If a soil-lead level of concern is present (i.e., yard-wide average soil lead concentration equals or exceeds 400 ppm), EPA recommends that low cost interim measures be implemented to reduce exposure. Measures are divided into those that focus on the yard and those that focus on children. Yard interventions include installation of soil cover (planting grass, sod, mulch, gravel), land use controls, and the placement of washable doormats at the entrance to homes. Land use controls should be used only if residents have reasonable alternatives to the area being restricted. If land use controls are used for soil that is subject to erosion, measures should be taken to contain the soil and control dispersion. Interventions that focus on children include more frequent washing of hands and toys and helping children to avoid parts of the yard known to contain lead in excess of the level of concern.

In the case of rental property, EPA believes that yard interventions are preferred because the property owner should be responsible for undertaking interim measures to reduce exposure to lead in soil. Nevertheless, EPA acknowledges that the effectiveness of such measures is not known and that child-oriented measures should be implemented as well. Therefore, the Agency recognizes that parents and care givers have a shared responsibility in reducing risks to children by monitoring children at play, washing children's hands and toys, and cleaning the doormats provided by owners.

When a soil-lead hazard is present (i.e., yard-wide average soil-lead concentration equals or exceeds 2000 ppm), EPA recommends soil abatement. Currently, the Agency has identified two acceptable methods of soil abatement. The first method is removal and replacement under which the abatement contractor removes the upper six inches of soil and replaces it with fill material that is not lead contaminated (i.e., the concentration of lead is less than 400 ppm). The second abatement method involves the permanent covering of the contaminated soil with an impermeable cover such as concrete or asphalt.

While the risk assessor uses the yard-wide average soil-lead concentration to determine if a soil-lead level of concern or a soil-lead hazard is present, the information provided by each the soil sample can help the risk assessor and the property owner target interventions on the parts of the yard that have high soil-lead concentrations. For example, a soil-lead level of concern would

be present if the dripline sample is 800 ppm and the mid-yard sample is 200 ppm. In terms of intervention, however, bare soil should be covered in the dripline because that is where the soil-lead concentration exceeds the soil-lead level of concern. No action would be needed elsewhere in the yard.

The same approach would apply where the yard-wide average soil-lead concentration indicates that a soil-lead hazard is present. Abatement should be conducted in areas of the yard where sampling indicates that the soil-lead concentration exceeds the hazard standard. The average concentration should then be recalculated to determine if the yard-wide average is above the level of concern and interim interventions should be implemented. Table 1 provides a range of examples of possible soil-lead concentrations in the dripline and the mid-yard along with the recommended response. It assumes that in an abatement, the removed soil will be replaced with soil that has a concentration of 150 ppm.

Table 1: Soil-Lead Concentrations and Recommended Responses

Initial Concentration (ppm)			Response	Post Intervention Concentration (ppm)			Response
Dripline	Mid-yard	Average		Dripline	Mid-yard	Average	
600	150	375	no response necessary	not applicable			
2,500	100	1,300	interim measures in the dripline	not applicable			
3,800	2,200	3,000	abate both dripline and mid-yard	150	150	150	no further action
3,800	850	2,325	abate dripline	150	850	500	interim measures in mid-yard
3,800	600	2,200	abate dripline	150	600	273	no further action
1,500	2,700	2,100	abate mid-yard	1,500	150	825	interim measures in mid-yard

With respect to soil interventions, EPA would like to call attention to three situations that merit further attention. First, in cases where interim measures (e.g., soil cover) or abatement

should be implemented in the mid-yard. the property owner may want to conduct additional soil sampling to identify where soil-lead concentrations exceed the hazard standard or the soil-lead level of concern and focus interventions on those areas. The choice of whether to conduct additional sampling will depend largely on a comparison of the cost of the sampling with the incremental cost of implementing controls throughout the whole yard outside of the dripline versus only those parts of the yard where the soil-lead concentrations exceed the level of concern. The balance of the cost of additional sampling with the potential savings from targeting interventions depends on several factors including the type of intervention recommended (i.e., abatement, interim controls) and the extent of contamination.

In general, the cost of additional sampling would likely be justified where abatement is the recommended response because of the high cost associated with abatement. Where lower cost, interim measures are the recommended response, it is less likely that the cost of additional sampling would be justified. The other factor that the property owner needs to consider is the extent of contamination. If contamination is limited, targeting the response can reduce costs, possibly justifying the additional sampling costs. Where contamination is extensive, it is unlikely that the cost of additional sampling would be justified because response actions cannot be targeted and costs would not be reduced. Because the extent of contamination is unknown prior to additional sampling, the property owner may want discuss with the risk assessor the likelihood that contamination is limited to a few parts of the yard or that it is widespread throughout the yard. For example, the risk assessor may know that soil-lead levels in the community are generally elevated and, therefore, additional sampling would not help the owner to target interventions.

Second, when abatement of part of the yard is indicated, the property owner may want to consider the incremental cost of removing soil that is not a hazard but exceeds the soil-lead level of concern. Because some components of soil abatement costs remain constant regardless of the amount of soil abated, the incremental cost of removing the additional soil may be relatively low. Therefore, abatement of the additional soil may be appropriate, especially if the soil-lead concentration is at levels more closely associated with higher risks of elevated blood lead levels (i.e. 1,200 ppm). For example, some contractors may have a minimum charge or a site charge for bringing equipment to the property.

EPA wishes to give special consideration to a third situation: a soil-lead hazard is not present based on the yard-wide average, but a soil sample taken from an identifiable play area has a soil-lead concentration exceeding 2,000 ppm. Although a soil-lead hazard is not present, EPA recommends abatement of the play area due to the high exposure potential.

Dust

The approach for responding to a dust-lead hazard is also unique. Although EPA treats dust as a source of lead exposure for purposes of the Section 403 rule, it is also appropriate to consider dust as part of the exposure pathways when designing a response strategy. Deteriorated interior lead-based paint and lead-contaminated soil are the sources of lead in household dust. Consequently, the response to a dust-lead hazard should be accompanied by source control activities (e.g., paint repair or abatement) unless the risk assessment identifies lead-contaminated dust hazards in the absence of hazardous lead-based paint, a soil-lead hazard, or soil-lead level of concern.

The response to a dust-lead hazard is specialized cleaning, that is, cleaning specifically designed to remove the microscopic particles of lead that contaminate dust as well as reduce overall dust levels. The protocol described in the HUD Guidelines includes three steps: HEPA¹ vacuuming, wet washing, and HEPA vacuuming. In light of the cost of this method, intensive research is underway to evaluate cleaning methods to identify the most cost-effective approaches.

Whole Property Approach

EPA strongly recommends that property owners choose hazard control strategies that address all problems identified by the risk assessor. This recommendation is based on two reasons. First, partial responses leave exposure in some pathways at unacceptably high levels and, therefore, do not adequately reduce risk. Failure to control all pathways is of special concern because the risk assessor is unable to determine which source of exposure presents the greatest risk to an individual child. Second, unaddressed hazards and contamination can recontaminate media that are addressed by interventions. The following example illustrates these concerns. In this example, a risk assessor finds that a home contains hazardous lead-based paint, dust-lead hazards, and soil-lead hazards. The owner repairs the paint, performs specialized cleaning, but fails to address the soil, leaving the lead in the soil as a source of exposure through direct ingestion. In addition, the lead in the soil can be tracked or blown into the house, recontaminating the interior dust which can also be ingested by a child. Therefore, to ensure that interventions are effective at reducing risk and that the interventions remain effective, it is critical that owners address all hazards and lead contamination identified by the risk assessor.

¹ A HEPA or high efficiency particle accumulator vacuum is a special vacuum cleaner equipped with a HEPA exhaust filter that removes microscopic particles before the air is blown out of the vacuum cleaner.

Sources of Advice and Information

Several sources of information are available to property owners who want to evaluate and/or control lead-based paint hazards and lead-contaminated soil at their property. These sources include certified risk assessors, the HUD Guidelines, and the National Lead Information Center's Clearinghouse.

A certified risk assessor is a professional who is trained to identify lead-based paint hazards at residential property and to recommend approaches for controlling these conditions. Risk assessors are certified by States or Indian Tribes that have programs authorized by EPA or are certified by EPA for States and Tribes without authorized programs. Because a risk assessor conducts a thorough evaluation of a property, he/she is familiar with the specific conditions that exist and, therefore, is in the best position to design a hazard control strategy for that property. A directory of certified risk assessors by state can be obtained from the Lead Listing (1-888-LEADLIST or <http://www.leadlist.org>).

The HUD Guidelines provide detailed, comprehensive, technical information on how to identify lead-based paint hazards in housing and how to control such hazards safely and efficiently. The goal of this document is to help property owners, private contractors, and government agencies sharply reduce children's exposure to lead without unnecessarily increasing the cost of housing. The Guidelines, which were updated in 1995, are based on the most current scientific research. As new information becomes available, HUD expects to issue revisions and updates that will incorporate advances in technology and more cost-effective methods validated by research and experience. The Guidelines can be obtained from HUD USER (1-800-245-2691). The Guidelines can also be downloaded from HUD's web site (<http://www.hud.gov/lea>).

The National Lead Information Center (NLIC) serves as a national information dissemination center for the public to obtain general information about lead poisoning and prevention. EPA, HUD, and the Centers for Disease Control and Prevention (CDC) jointly fund NLIC. NLIC operates Clearinghouse which answers specific questions on lead-related issues in English or Spanish. The Clearinghouse, 1-800-424-LEAD, provides relevant informational materials, including federal publications, selected journal articles, a quarterly newsletter entitled Lead Inform, and other publications. Callers can receive information on laboratories qualified to test for lead in soil, paint, and dust; referrals to federal, state, and local agencies; and updates on lead-related federal laws and regulations.