

# **Final Report of the Small Business Advocacy Review Panel**

**on EPA's Planned Proposed Rule:**

**Lead-Based Paint; Certification and Training;  
Renovation and Remodeling Requirements**

**Report Date: March 3, 2000**

**Rule Proposal Date: \_\_\_\_\_**  
[please record proposal date here, see note below]

*This report is held as a deliberative document until the rule for which this Panel was convened is proposed. Upon proposal, this report will be placed in the rulemaking docket. If there is a question about the status of the rule, please check with the office of EPA's Small Business Advocacy Chair (202) 260-4001 or the EPA Office of Pollution, Prevention and Toxics (<http://www.epa.gov/lead/>).*

The Honorable Carol M. Browner  
 Administrator  
 U.S. Environmental Protection Agency  
 Ariel Rios Building  
 1200 Pennsylvania Avenue, N.W.  
 Washington, D.C. 20460

MAR - 3 2000

Dear Ms. Browner:

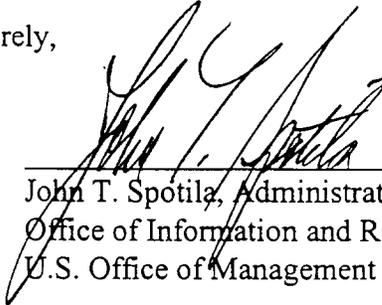
Enclosed for your consideration is the Report of the Small Business Advocacy Review Panel (SBAR Panel or Panel) convened for the planned proposed rulemaking on **Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements** that the Environmental Protection Agency (EPA or the Agency) is currently developing.

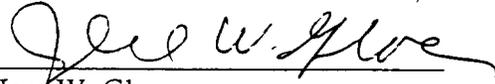
On November 23, 1999, EPA's Small Business Advocacy Chairperson convened this Panel under section 609(b) of the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). In addition to the Chair, the Panel consisted of the Director of EPA's Office of Pollution Prevention and Toxics, the Chief Counsel for Advocacy of the Small Business Administration (SBA), and the Deputy Administrator of the Office of Information and Regulatory Affairs within the Office of Management and Budget (OMB).

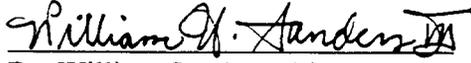
The Report includes a discussion of the options under consideration for the proposed regulation under development, a description of the Panel's outreach to small entity representatives, a summary of small entity comments received by the Panel, and the Panel's findings and discussion.

Sincerely,

  
 Thomas E. Kelly, Chair  
 Small Business Advocacy  
 U.S. Environmental Protection Agency

  
 John T. Spotila, Administrator  
 Office of Information and Regulatory Affairs  
 U.S. Office of Management and Budget

  
 Jere W. Glover  
 Chief Counsel for Advocacy  
 U.S. Small Business Administration

  
 Dr. William Sanders, Director  
 Office of Pollution Prevention and Toxics  
 Office of Prevention, Pesticides, and Toxic  
 Substances  
 U.S. Environmental Protection Agency

March 3, 2000

**Executive Summary**  
**Small Business Advocacy Review Panel Report**  
**Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements**

This document serves as an executive summary of the Report of the Small Business Advocacy Review Panel (SBAR Panel or the Panel) convened for the proposed rulemaking on the Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements that the Environmental Protection Agency (EPA or the Agency) is currently developing.

The Renovation and Remodeling requirements under development by EPA will regulate renovation and remodeling activities that could potentially generate lead hazards. Firms performing those activities that may be impacted include renovation and remodeling firms, training providers, lead inspection services firms, and multi-family property owners. The potentially impacted industries are characterized by a majority of small firms.

It is important to note that the Panel's findings and discussion are based on the information available at the time that the Panel report was drafted. EPA is continuing to conduct analyses relevant to the proposed rule, and additional information may be developed or obtained during the remainder of the rule development process and from public comment on the proposed rule. Any options the Panel identified for reducing the rule's potential regulatory impact on small entities, may require further analysis and/or data collection to ensure that the options are practicable, enforceable, fully protective of human health and consistent with the Toxic Substances Control Act (TSCA or the Act).

Summary of Small Entity Outreach

EPA, alone and in conjunction with SBA and OMB, has had several meetings and conversations with small entity representatives (SERs) to discuss the potential Renovation and Remodeling requirements and the related potential impacts. Prior to the Panel, EPA held two stakeholder meetings in December 1998, and March 1999, to discuss the types of contractors and/or tasks that produce lead hazards during renovation and remodeling. At the onset of pre-panel discussions with SBA and OMB, EPA held three conference calls in September 1999 with potential small entities to obtain feedback on the options and alternatives outlined for the proposal. Small entity representatives that attended the conference calls included renovation and remodeling firms, certified risk assessors, and industry organization representatives. Once the Panel was convened, the Panel met with the SERs on December 3, 1999. Summaries of the meetings with the small entity representatives are included in Appendix C of the Panel report. In addition to verbal comments noted by the panel at meetings and teleconferences, the panel also received written comments from members of each of the affected industry segments or their

representatives. A summary of the SERs written comments is presented in Section 7 and the complete written comments of the SERs can be found in Appendix D.

### Summary of Panel Findings and Discussion

#### ***Number and Types of Small Entities***

A complete description and estimate of the number and type of small entities to which the proposed rule may apply is presented in Section 4 of the Panel Report. The following small entities may be regulated under the Renovation and Remodeling requirement's proposal:

- Contractors and maintenance workers performing renovation and remodeling activities that generate lead hazards.
- Training Providers providing renovation and remodeling training services.
- Risk Assessors, Inspectors and Sampling Technicians involved in the identification of lead-based paint and clearance testing following renovation and remodeling activities.
- Property Owners and Managers of affected housing stock.

#### ***Potential Reporting, Record Keeping, and Compliance Requirements***

As appropriate, regulated entities may be required to demonstrate that they have met applicable training, certification, and work practice standards by complying with reporting and record keeping requirements. Examples of reporting and recordkeeping requirements that EPA may propose include information demonstrating compliance with certification or accreditation requirements.

#### ***Relevance of Other Federal Rules***

A discussion of Federal rules related to the Renovation and Remodeling proposed rule is provided in section 2 of the Panel Report.

#### ***Panel Recommendations and Comments for the Options Considered***

The Panel considered a wide range of options and regulatory alternatives for providing small businesses with flexibility in complying with potential Renovation and Remodeling requirements. A detailed discussion of the eight options and approaches that the Panel discussed for Renovation and Remodeling requirements are presented in Chapter 3 of the Panel report. As a part of the process, the Panel requested and received comments from the SERs on regulatory options developed by EPA and several additional ideas for compliance flexibility that were suggested by SERs and Panel members. The Panel's recommendations on the eight options and one additional area are based on its consideration of the comments received, as well as additional business and technical information. The following is a summary of the Panel discussion and recommendations for each option.

### Applicability

Under Title IV of the Toxic Substances Control Act (TSCA) the Renovation and Remodeling proposed rule may apply to individuals and firms conducting renovation in all or certain housing built before 1978, the year that lead-based paint was banned in consumer use.

The Panel received different opinions from the SERs on the applicability options, and discussed the pros and cons of alternatives.

OMB and SBA believe that the protection of public health may be achieved at significantly lower cost by restricting rule requirements to homes built before 1960. Older homes are more likely to have lead-based paint on at least one surface, to have a higher concentration of lead in lead-based paint, and to have a greater surface area coated with lead-based paint. Homes built between 1960 and 1979 contain only 5% of the National total amount of lead-based paint on interior components. Lastly, even those firms not required to comply with a Renovation and Remodeling rule will have the benefit of EPA guidance on lead safe work practices and will be subject to the requirements of the pre-renovation education rule (40 CFR 745 Subpart E).

EPA believes that restricting the applicability of this rulemaking to pre-1960 housing may not provide adequate protection of public health. EPA understands that the quantity and concentration of lead in paint used after 1960 decreased, however, a large number of these homes have some lead-based paint and even small quantities of such paint can produce hazardous lead contamination. Forty-two percent of all housing containing some lead-based paint was constructed between 1960 and 1978. Additionally, despite the availability of educational materials, EPA is still concerned that, should housing constructed between 1960 and 1978 be excluded, owners and occupants of such housing may deduce, incorrectly, that their dwelling is free of lead-based paint and associated lead hazards.

*The Panel recommends that EPA request public comment in the proposal on the option of limiting the housing stock affected by the rule to that constructed prior to 1960. Also, the Panel recommends that EPA solicit comments on the pre-1978 option as well as other options that may help to reduce costs while achieving the protection of public health.*

### Exemptions to Applicability of the Rule

The Panel discussed two exemptions: (1) a “*deminimis*” exemption for activities that disturb less than two square feet of lead-based paint; and (2) an exemption for emergency renovations.

SBA and OMB also recommend that EPA provide additional exemptions for firms who routinely disturb small amounts of lead paint or do not create lead hazards. They recommend that EPA apply the regulation to firms that regularly perform painting, construction or renovation work (i.e. general contractors, builders, remodelers, and painters) and exempt specialty contractors (i.e. plumbers and electricians) in the proposal. Under this proposed option, these specialty contractors would still be expected to follow lead-safe practices as outlined in HUD and EPA guidance, but would not be subject to certification, training and other regulatory requirements.

*The Panel recommends that EPA include a “de minimis” exemption and an exemption for emergency renovations in the proposal.*

### **Certification of Firms**

The proposed regulation may require a firm to be certified by EPA or an authorized state or tribal government when performing renovation and remodeling activities on applicable housing.

*The Panel believes that certification of renovation and remodeling firms would help consumers identify qualified firms. The Panel recommends that EPA attempt to balance the goals and objectives of the statute, with the burden associated with such regulatory requirements, in order to avoid placing compliant firms at an undue competitive disadvantage. The Panel recommends that EPA include firm certification in the proposal.*

### **Training and Certification of Individuals**

EPA may propose to require all or some individuals engaged in regulated renovation and remodeling activities to complete a training course and possibly become certified by EPA or an authorized state or Tribal government.

*The Panel believes that training renovation and remodeling workers improves lead safe work practices. However, the Panel understands that the rate of worker turnover in the industry is high and firms would probably incur greater training and certification costs. The option of limiting formal training requirements to a job supervisor (or other clearly defined responsible party) provides a less burdensome alternative. The Panel recommends that EPA include formal training for supervisors (or other clearly defined competent person) and informal training for all others in the proposal.*

### **Accreditation of Training Providers**

EPA may propose to require entities that train renovation and remodeling workers to obtain accreditation from EPA or an authorized state or Tribal government.

*The Panel believes that accreditation provides a mechanism to ensure quality control of training programs, to establish a level of essential training, and to facilitate reciprocity between states. The Panel is also concerned about imposing an undue burden on training providers. The Panel recommends that EPA include accreditation of training providers in the proposal.*

### **Work Practice Standards**

Current EPA regulations for lead-based paint abatement activities contain specific prescriptive work practice standards that take into account reliability, effectiveness, and safety. EPA could propose to establish prescriptive work practice standards or performance-based standards for renovation and remodeling activities. A prescriptive regulation would require contractors to follow specific detailed procedures, whereas, a performance-based regulation would establish standards that would allow contractors to choose cost-effective techniques to accomplish such standards.

*The Panel recognizes that a prescriptive approach may clearly identify methodologies to minimize lead hazards. However, prescriptive practices may not work effectively in some*

*situations a contractor may face. The Panel believes that a performance-based approach would provide the contractor with greater flexibility to manage risk in a cost-effective manner while minimizing the introduction of lead hazards given a particular situation. Therefore, the Panel recommends that EPA include performance-based standards in the proposal.*

### **Prohibited Practices**

EPA may propose to prohibit certain work practices as recommended in HUD's 1995 publication: "Guidelines for the Evaluation and Control of Lead-based Paint Hazards in Housing," because they may produce high levels of lead dust which could be difficult, if not impossible to clean up. These practices include open flame burning or torching of lead-based paint; machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint *except* when done with HEPA exhaust control; dry scraping of lead-based paint *except* around electrical outlets or for any area no more than two square feet in any one room, hallway, or stairwell, or for any area no more than twenty square feet on exterior surfaces; and operating a heat gun at 1100 degrees Fahrenheit or higher.

The SERs commented that such prohibitions may increase cost, decrease quality, and impede cleanup efforts. Such prohibitions may also cause homeowners and building owners to seek contractors willing to avoid compliance with such prohibitions. These contractors would likely avoid compliance with other lead safe work practices as well, leading to a reduction in public health, rather than an increase. SBA and OMB recommend that EPA not prohibit work practices, relying instead on the effectiveness of containment and cleanup work practice requirements.

*The Panel recognizes concerns over the feasibility of prohibiting or severely restricting common renovation practices when cost-effective alternatives may not exist. The Panel recognizes that prohibiting such practices could adversely affect the cost and quality of renovations. However, the Panel is also concerned about the potential risks associated with the release of significant amounts of lead contaminated dust that may be associated with such activities.*

*The Panel notes that proper training, in combination with reasonable performance, containment and cleanup requirements, may adequately address the introduction of new hazards. The Panel recommends that EPA request public comment on the prohibition of work practices and seek comment regarding the cost, benefit and feasibility of such prohibitions.*

### **Exterior Clearance**

EPA could propose to require an exterior clearance following exterior renovation and remodeling. This clearance could include a visual inspection or soil testing for lead contamination. A visual inspection would evaluate whether visible amounts of dust and debris remain on exterior horizontal surfaces and if visible paint chips remain on the ground below the work area. Exterior renovation, remodeling, and repainting tasks can create lead-contaminated debris (e.g., paint chips) and lead-contaminated dust levels in soil that are equivalent to those produced during lead-based paint abatement. EPA regulations applicable to exterior lead abatement work call for a visual inspection (40 CFR 745.227(e)(8)(v)(c)) and do not require soil lead testing.

*The Panel recognizes the potential costs associated with exterior soil sampling and the difficulty a contractor may have in achieving clearance due to existing soil lead contamination from the deterioration of lead-based paint, deposition resulting from industrial sources, and leaded gasoline. Also, the Panel does recognize that other Federal regulations (ie., the lead-based paint abatement regulation at 40 CFR 745 subpart L) only require visual clearance following abatement and that consistency with such regulation will be an important factor for consideration. The Panel recommends that EPA include in the proposal a visual inspection provision for exterior clearance.*

### **Interior Clearance**

EPA may propose to require an interior visual inspection and/or dust clearance testing following renovation and remodeling activities because this work often creates lead-contaminated dust levels in excess of established hazard criteria.

*The Panel recognizes that the issue of interior clearance has raised many concerns related to the type of clearance (visual or dust testing). These concerns include: the time and expense involved, who would be responsible for conducting clearance, and accounting for existing lead contaminated dust. Recent studies provide some evidence that low clearance levels (e.g., 50 ug/ft<sup>2</sup>) can be achieved following a thorough and professional clean-up, however, there is contrary evidence in some field studies that speak to the difficulty in achieving floor clearance levels as high as 200 ug/ft<sup>2</sup>.*

*The Panel understands that dust clearance testing is the best method currently available to quantify the presence of a lead dust hazard and that visual examination alone may not be adequate to determine the presence of such a hazard. A study being conducted in the State of Maryland to evaluate the effectiveness of visual clearance supports this latter conclusion. Preliminary study results of dust lead samples taken following visual clearance of work areas in which lead risk reduction activities were conducted indicate that the majority of dust lead levels are greater than EPA dust hazard guidance.*

*SBA is concerned about the cost and feasibility of consistently achieving low interior clearance requirements based on currently available field evidence. SBA introduced a new option to the Panel that would include a specific cleanup methodology followed by a visual clearance requirement as a alternative to dust clearance testing. The Panel recommends that EPA include this new option in the proposal and take comment on the merits of all the interior clearance options in the proposal. The Panel also recommends that EPA take comment on options for clearance that are less costly and less burdensome, and yet still demonstrate the absence of lead hazards.*

### **Additional Issues**

*The Panel recommends that EPA continue to refine the impact analysis of the proposal, utilizing comments from affected industry and other parties related to costs and other issues. Additionally, with regard to the EPA study titled: "Lead Exposure Associated with Renovation and Remodeling Activities; Phase III" (EPA 747-R-99-002), the Panel recommends that EPA do further analysis of the existing Phase III data to analyze the impact of renovation and remodeling activities by contractors, and building owners (those persons who would be subject to this regulation).*

The Panel discussed the 403 hazard standard, proposed in June 1998, because it includes clearance standards that may be used to determine adequate clean-up in the Renovation and Remodeling rule. As suggested in comments submitted on the 403 proposal, SBA and OMB recommend that EPA reassess the IEUBK and Empirical Models, evaluating each model's predicted distribution of blood lead levels against distributions observed in the Rochester study, the pooled analysis by Lanphear et al. and NHANES III, and make appropriate adjustments to improve the ability of the models to predict the number of children with elevated blood lead.

11

Report of the Small Business Advocacy Review Panel

on

The Lead-based Paint; Certification and Training; Renovation and  
Remodeling Requirements

March 3 , 2000

## TABLE OF CONTENTS

1. Introduction
  2. Background
    - 2.1 Statutory and Regulatory Background
    - 2.2 Renovation and Remodeling Studies
    - 2.3 Health Effects of Lead Exposure
    - 2.4 Renovation and Remodeling Activities
    - 2.5 Pre-Panel Outreach
    - 2.6 Other Related Rules
  3. Options and Approaches for Renovation and Remodeling Proposal
    - 3.1 Applicability
    - 3.2 Firm certification
    - 3.3 Individual training and certification
    - 3.4 Accreditation
    - 3.5 Work practice standards
    - 3.6 Prohibited practices
    - 3.7 Exterior clearance
    - 3.8 Interior Clearance
    - 3.9 Cost of the Options
  4. Industries Potentially Directly Affected by the Proposal
    - 4.1 Small Entities Potentially Affected by the Proposal
    - 4.2 Small Business Impacts
  5. Small Entity Outreach
    - 5.1 Pre-Panel Conference Calls with Small Entity Representatives
    - 5.2 Panel Outreach with Small Entity Representatives
  6. Small Entity Representatives
  7. Summary of Comments from SERs
  8. Panel Findings and Discussion
    - 8.1 Number and Types of Small Entities
    - 8.2 Potential Reporting, Record Keeping, and Compliance Requirements
    - 8.3 Relevance of Other Federal Rules
    - 8.4 Panel Recommendations for the Options Considered
    - 8.5 Additional Issues
- Appendix A: Summary of Section 1012/1013 Requirements  
Appendix B: SER Outreach Material  
Appendix C: Summaries of Panel-Related Outreach Meetings (Sept 22 & 23, Dec 3, 1999)  
Appendix D: SER's Written Comments

## **Report of the Small Business Advocacy Review Panel on Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements**

### **1. INTRODUCTION**

This report is presented by the Small Business Advocacy Review Panel (SBAR Panel or Panel) convened for the proposed rulemaking on the Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements, currently being developed by the Environmental Protection Agency (EPA). On November 23, 1999, EPA's Small Business Advocacy Chairperson convened this Panel under section 609(b) of the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). Section 609(b) requires convening a review Panel prior to publication of the initial regulatory flexibility analysis that an agency may be required to prepare under the RFA. In addition to its chairperson, the Panel consists of the Office Director of the Office of Pollution Prevention and Toxics, the Administrator of the Office of Information and Regulatory Affairs within the Office of Management and Budget, and the Chief Counsel for Advocacy of the Small Business Administration.

This report includes the following:

- Background information on the proposed rule being developed;
- Information on the types of small entities that would be subject to the proposed rule;
- A description of efforts made to obtain the advice and recommendations of representatives of those small entities; and
- A summary of the comments that have been received to date from those representatives.

Section 609(b) of the RFA directs the Panel to report on the comments of small entity representatives and make findings on issues related to identified elements of initial regulatory flexibility analysis (IRFA) under section 603 of the RFA. Those elements of an IRFA are:

- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- A description of projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; and

- A description of any significant alternative to the proposed rule which accomplishes the stated objectives of applicable statutes and which minimizes any significant economic impact of the proposed rule on small entities.

Once completed, the Panel report is provided to the agency issuing the proposed rule and included in the rulemaking record. In light of the Panel report, and where appropriate, the agency is to make changes to the draft proposed rule, the IRFA for the proposed rule, or the decision on whether an IRFA is required.

It is important to note that the Panel's findings and discussion are based on the information available at the time the final Panel report is drafted. EPA will continue to conduct analyses relevant to the proposed rule, and additional information may be developed or obtained during the remainder of the rule development process. The Panel makes its report at a preliminary stage of rule development and its report should be considered in that light. At the same time, the report provides the Panel and the Agency with an opportunity to identify and explore potential ways of shaping the proposed rule to minimize the burden of the rule on small entities while achieving the rule's purposes. Any options identified by the Panel for reducing the rule's potential regulatory impact on small entities may require further analysis and/or data collection to ensure that the options are practicable, enforceable, environmentally sound, and consistent with the statute authorizing the proposal.

## **2. BACKGROUND**

### **2.1 Statutory and Regulatory Background**

In 1992, Congress passed the Residential Lead-Based Paint Hazard Reduction Act (Title X). This law directs EPA to develop regulations under the Toxic Substances Control Act (TSCA) and create standards for conducting lead-based paint activities that include abatement. EPA has already promulgated final regulations for lead-based paint activities in target housing and child-occupied facilities (40 CFR Part 745 Subpart L). Definitions of target housing and child-occupied facilities are presented in section 3 of this report. These regulations require that individuals conducting lead-based paint inspections, risk assessments, and abatements be certified and that the work be performed in accordance with specified work practice standards.

EPA's regulations also establish a process for States and Indian Tribes to seek authorization to administer such a lead program. The Agency is administering lead-based paint training and certification programs and enforcing work practices in the States or Indian Tribes that have not been authorized.

TSCA Section 402(c) directs EPA to address renovation and remodeling activities by first conducting a study (see accompanying *Summary of EPA Renovation and Remodeling (R&R) Study*) of the extent to which persons engaged in various types of renovation and remodeling activities are exposed to lead in the conduct of such activities or disturb lead and create a lead-based paint hazard on a regular or occasional basis. Section 402(c) further directs the Agency to

revise the lead-based paint activities regulations (40 CFR Part 745 Subpart L) to include renovation or remodeling activities that create lead-based paint hazards. In order to determine which contractors are engaged in such activities the Agency is directed to utilize the results of the study and consult with the representatives of labor organizations, lead-based paint activities contractors, persons engaged in remodeling and renovation, experts in lead health effects, and others.

## 2.2 Renovation and Remodeling Studies

TSCA Section 402 (c)(2) calls for the Agency to conduct a study of renovation and remodeling activities to determine the risk of exposure to lead. The study objectives were to identify renovation and remodeling (R&R) work activities which may create a lead exposure hazard to (1) R&R professionals performing the work or (2) building occupants (especially young children) who live or visit the buildings where the work is being done. EPA conducted four distinct phases of the R&R study, the final phase being completed in March 1999. The study approach and conclusions for each phase are briefly summarized below.

The approach taken for Phase I, the Environmental Field Sampling Study (EFSS), involved a series of case studies. These case studies focused on R&R "target" work activities, such as, carpet removal, window replacement, HVAC (heating, ventilation, and air conditioning) removal/modification/replacement, demolition/removal of architectural components, and generic carpentry in buildings where lead-based paint is observed in concentrations above 1 mg/cm<sup>2</sup>. We collected two types of samples for each work activity. The first was worker air-monitoring samples which indicated the degree of worker inhalation exposure. The second was settled-dust samples which indicated potential for exposure to building occupants.

Phase I conclusions from the personal air-monitoring samples show that some R&R work activities can result in worker exposure above the Occupational Safety and Health Administration's Permissible Exposure Limit (OSHA PEL; 8-hr TWA). The settled dust samples from Phase I showed that large amounts of lead-dust can be generated by most R&R work activities (window replacement, interior demolition, HVAC work, sanding of painted surfaces, sawing of painted surfaces, etc.). When lead-based paint is disturbed or dust containing lead released, these work activities produced lead loadings (in settled dust) that ranged from approximately 300 ug/ft<sup>2</sup> to over 40,000 ug/ft<sup>2</sup>. The effectiveness of cleanup for removing settled lead-dust was examined using two popular cleanup methods: broom sweeping and shop-vacuuming. Data from R&R Phase I show that standard broom sweeping or shop-vacuuming cleanup can remove a high percentage of the lead-dust (99%), but lead levels still remain consistently above 100 ug/ft<sup>2</sup>. In addition, the data show that standard cleanup techniques sometime disperse lead-dust throughout the work-site, thereby increasing lead levels in areas more distant from the work site.

The approach for Phase II, Worker Characterization and Blood-Lead (WCBS), involved collecting data on blood samples and questionnaires from 585 R&R workers from Philadelphia and St. Louis. The questionnaire focused on demographic and background information such as work history, work habits, hobbies, etc. From Phase II, EPA concluded that there is little

evidence from blood samples that R&R professionals are, in general, exposing themselves to lead levels of serious concern. Separate examination of workers by job category (floor layers, carpenters, window replacement specialists, laborers, drywall installers, painters, supervisors) disclosed that there were statistically significant differences between some categories of workers. For none of these categories, however, did lead exposure appear to be an especially serious problem.. In addition, the questionnaire data from this study indicate that few R&R professionals use respirators while working. Regarding containment and cleanup, the questionnaire data does not provide information about containment procedures used, but does indicate that few R&R professionals use a high energy particulate air (HEPA) vacuum.

Phase III of the study was a Retrospective Study of Wisconsin Children, The Wisconsin Childhood Blood-lead Study. The approach for Phase III focused on the relationship between R&R activities and children's blood-lead levels. The EPA, the University of Wisconsin in Madison and the Wisconsin Department of Health jointly conducted this large scale retrospective study using Wisconsin's State Blood-lead Registry. Extensive telephone interviews were conducted with 3,654 parents/guardians of Wisconsin children who had already had their blood-lead tested. The telephone interviews consisted of questions about what R&R work, if any, had been conducted within each residence in the last year.

Analysis of the Phase III data indicates that general residential R&R is associated with an increased risk of elevated blood-lead levels in children. Specifically, a child living in a residence where R&R was conducted in the last 12 months was 30% more likely to have an elevated blood-lead level. Phase III also showed that some R&R activities (paint removal by heat gun open flame, chemical stripper, and surface preparation, etc.) were specifically associated with a higher frequency of elevated blood-lead in children.

The R&R effect shown in the Phase III study is somewhat ambiguous in that several confounding factors may have contributed to the blood lead levels. In addition, this study did yield several surprising results, such as showing an increased risk of elevated blood-lead levels in homes that were built after 1978 (the date lead-based paint was banned), although the report did offer several explanations for this result. Furthermore, there is no statistically significant increased risk of elevated blood lead level (possibly because of small sample size) when the study focuses solely on work performed by apartment building owners, apartment building staff or professional contractors, who are the persons who would be subject to this new regulation. EPA will perform further analysis of the existing phase III data to analyze the impact of R&R activities by contractors and building owners.

Phase IV of the study, Work Characterization and Blood-Lead for Highly Exposed Workers, was an extension of Phase II. Where Phase II examined lead exposure among a general population of R&R professionals, Phase IV focused on individuals who worked primarily in old historic buildings. Phase IV explored lead exposure in 161 professional R&R workers and 82 homeowners who worked extensively in old houses. Each study participant provided a blood sample for analysis and completed a detailed questionnaire identical to the one used in Phase II.

The results of Phase IV demonstrate that individuals who regularly work in high lead

exposure potential settings (i.e. old houses) do have a higher probability of an elevated blood-lead level than the general population of R&R professionals measured in Phase II. The geometric mean blood-lead level for R&R professionals was significantly greater than for homeowners. Preparation for painting and/or sanding of painted surfaces were the activities most consistently associated with elevated blood-lead levels among study participants. Regarding containment and cleanup, the studies questionnaire data does not provide information about containment procedures used, but does indicate that the majority of R&R professionals spend between one and four hours cleaning daily.

The Agency concluded from this study that many R&R work activities can produce or release large quantities of lead and may be associated with elevated blood lead levels. These activities include, but are not limited to: sanding, cutting, window replacement, and demolition. Lead exposure to R&R workers appears to be less of a problem than to building occupants (especially young children). Some workers (and homeowners) are occasionally exposed to high levels of lead. Any work activity that produces dust and debris may create a lead exposure problem.

### **2.3 Health Effects of Lead Exposure**

Lead poisoning in children is widely recognized as a major health problem in the United States. While there are many sources of lead that children may be exposed to, lead-based paint in residential housing is considered the remaining major source. Lead is a powerful toxicant with no known beneficial purpose in the human body. The health risks associated with lead exposure are significant for all humans, but young children, with their developing nervous systems, are especially vulnerable to lead's injurious effects. The toxic effects of lead are most evident in the nervous system, although all parts of the body can be damaged at high exposure levels. This is especially troubling for the young because many of the effects that lead has on the central nervous system are irreversible.

Blood-lead concentration is the most commonly used measure of lead exposure. An extensive body of research relates the health effects of lead exposure to blood-lead concentration (USEPA, 1998, Chapter 2). This research includes a wide range of epidemiological studies involving human subjects. Corroborating the human studies are a number of controlled laboratory experiments on the effects of lead exposure to a variety of animals. These animal experiments clearly demonstrate that the health effects observed in the human studies are indeed caused by lead exposure (Rice, 1996).

The research has documented that blood lead levels as low as 10  $\mu\text{g}/\text{dl}$  are associated with harmful effects on children's learning and behavior (a clear threshold for health effects has not been demonstrated) (CDC, 1997; Schwartz, J, 1994; USEPA, 1998, Ch 2;). Long-lasting impacts on intelligence, motor control, hearing, etc. have been documented at blood-lead levels that don't produce obvious symptoms and were once thought to be safe. At blood-lead levels of 20 to 40  $\mu\text{g}/\text{dl}$ , the effects of lead become more pronounced, and other adverse health effects are observed in a broader range of body systems, including increased blood pressure, delayed reaction times, anemia, and kidney disease. At blood-lead concentrations above 60  $\mu\text{g}/\text{dl}$ ,

symptoms of severe lead poisoning include kidney failure, abdominal pain, nausea and vomiting, and pronounced mental retardation. At higher blood-lead levels, convulsions, coma, and death may result (USEPA, 1998, Ch. 2.).

While it is possible for lead to enter the body through ingestion (eating and drinking), inhalation (breathing in air), or absorption (through skin contact), many researchers consider ingestion of dust and soil via hand-to-mouth behavior to be the major route of exposure for children. Children that are 1-2 years old who are crawling or just beginning to walk are in frequent contact with the floor. These kids put their hands and other items, like toys, in their mouth often. Lead dust is swallowed when these children place their hands, moistened by saliva, repeatedly on floors and other surfaces that may contain lead dust, and then return their hands to the mouth. Studies have indicated that blood-lead levels have a tendency to increase rapidly and peak in children 1-2 years old (USEPA, 1995, 1996).

Epidemiologic evidence indicates that lead-contaminated dust, even at low to moderate levels, can increase children's blood-lead concentrations. What's more, lead on small particles of dust, when ingested, is more apt to end up in the blood stream. In addition, these smaller particles are difficult to see with the naked eye and are hard to detect when scattered evenly across a floor or other surface.

A broad range of studies have indicated that lead-based paint, including the resulting lead-contaminated dust and lead-contaminated soil, is a primary contributor to lead exposure in young children. The scientific literature contains extensive evidence of the relationship between childhood blood-lead concentrations and environmental-lead levels. This evidence is provided by two types of studies. The first type investigates the relationship between elevated blood-lead concentrations and lead levels in the child's residential environment. This first type of study has consistently demonstrated that elevated blood-lead concentrations are associated with elevated lead levels in the dust, paint, and soil in the surrounding environment. Intervention studies are the second type. These studies have demonstrated that reduction in children's blood-lead concentrations has occurred following interventions that reduce childhood lead exposure from paint, dust and soil.

Using U.S. median soil exposure levels (72 ppm), and holding other environmental exposures constant, Lanphear found that at floor dust loadings of 10 ug/ft<sup>2</sup> the geometric mean blood lead levels observed were 4.6 ug/dl. At these levels 7.4% of children had a blood lead level in excess of 10 ug/dl. At 100 ug/ft<sup>2</sup> using the same soil level, the geometric mean blood lead level was 7.3 ug/dl and 28% of the children were estimated to have blood lead levels of 10 ug/dl or higher (Lanphear, 1998).

In conclusion, it has been established that lead is toxic even in very small amounts. The research has documented that blood lead levels as low as 10  $\mu\text{g}/\text{dl}$  are associated with harmful effects on children's learning and behavior (a clear threshold for health effects has not been demonstrated) (CDC, 1997; Schwartz, J, 1994; USEPA, 1998, Ch 2;). In addition, Lanphear found in a pooled analysis of twelve epidemiological studies that elevated blood-lead levels can result when floor dust levels are 10 - 100 ug/ft<sup>2</sup> (Lanphear, 1998). Phase I of the R&R study and

work by other researchers have measured floor dust levels generated from various R&R activities to range from 300 ug/ft<sup>2</sup> to 40,000 ug/ft<sup>2</sup>. These measures are 2-3 orders of magnitude greater, prior to any cleanup, than levels that have been established to cause elevated blood-lead levels. Phase I of the R&R study also demonstrates that standard cleaning practice (broom sweeping and/or shop-vacuuming) still consistently leaves dust lead levels above 100 ug/ft<sup>2</sup>. These values exceed both the Agency's existing floor dust hazard guidelines of 100 ug/ft<sup>2</sup> and the proposed floor dust hazard standard of 50 ug/ft<sup>2</sup>. The conclusion is that R&R activities can result in potentially dangerous exposures to children, especially those aged 6 yrs old and under.

## REFERENCES

Rice, DC (1996) "Behavioral Effects of Lead: Commonalities Between Experimental and Epidemiologic Data." *Environmental Health Perspectives*. 104(2): 337-351.

U.S. Environmental Protection Agency (1998) "Risk Analysis to Support Standards for Lead in Paint, Dust and Soil. Volume I." U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. EPA 747-R-97-006, June 1998.

CDC 1997 - Centers for Disease Control (1997) "Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials." National Center for Environmental Health, U.S. Department of Health and Human Services, November 1997.

Schwartz, J. (1994) "Low-Level Lead Exposure and Children's IQ: A Meta-Analysis and Search for a Threshold." *Environmental Research*. 65: 42-55.

U.S. Environmental Protection Agency (1996) "Seasonal Trends in Blood Lead Levels in Milwaukee." U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. EPA 747-R-95-010, August 1996.

U.S. Environmental Protection Agency (1995) "Seasonal Rhythms of Blood Lead Levels: Boston, 1979-1983." U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. EPA 747-R-94-003, September 1995.

Lanphear, B.B., M. Weitzman, N.L. Winter, S. Eberly, B. Yakir, M. Taner, M. Edmond, and T.D. Matte (1996b) "Lead-Contaminated House Dust and Urban Children's Blood Lead Levels" *American Journal of Public Health*, Vol. 86, No. 10, pp. 1416-1421.

Lanphear, BP, Matte, TD, Rogers, J, Clickner, RP, Dietz, B, Bornschein, RL, Succop, P, Maheffey, KR, Dixon, S, Galke, W, Rabinowitz, M, Farfel, M, Rohde, C, Schwartz, J, Ashley, P, and Jacobs, D. (1998). "The Contribution of Lead-Contaminated House Dust and Residential Soil to Children's Blood Lead Levels: A Pooled Analysis of 12 Epidemiologic Studies." *Environmental Research* (Section A). 79:51-68.

Bellinger, D., Stiles, K.M., Needleman, H. (1992) "Low-Level Lead Exposure, Intelligence, and Academic Achievement: A Long-term Follow-up Study." *Pediatrics* 90(6): 855-861.

## 2.4 Common Renovation and Remodeling Activities

Renovation activities cover a broad range of activities. Renovation means the modification of any existing structure, or portion thereof, that results in the disturbance of painted surfaces, unless that activity is performed as part of an abatement as defined under current regulation at 40 CFR 745.233. The term renovation includes (but is not limited to): the removal or modification of painted surfaces or painted components (e.g., modification of painted doors, surface preparation activity (such as sanding, scraping, or other such activities that may generate paint dust)); the removal of large structures (e.g., walls, ceiling, large surface replastering, major replumbing); and window replacement. Many common interior renovation and remodeling projects generate dust, including:

- Surface preparation for projects such as sanding, scraping, and sawing;
- Removing carpeting, cabinets, or other components;
- Refinishing painted floors; and
- Removing paint with a heat gun or open flame torch.

Renovation and remodeling activities conducted on building exteriors can release lead-contaminated dust and debris to surrounding soil and ground cover. If young children play in these areas, their normal hand-to-mouth behavior can result in lead exposures. Exterior work can also release dust that moves indoors by way of contaminated clothing or through open windows or doors.

## 2.5 Pre-Panel Outreach

The Agency conducted two stakeholder meetings to discuss the types of contractors and/or tasks which produce lead hazards during renovation and remodeling. These meetings were held in December, 1998, and March, 1999, and included representatives of labor organizations, contractors, professional remodeling and renovation workers, experts in lead health effects, and others. Summaries of these meetings are in .

## 2.6 Other Related Rules

Title X, the Residential Lead-Based Paint Hazard Reduction Act of 1992, refocused national attention and resources on reducing lead hazards before a child is poisoned, rather than relying on poisoned children as the trigger for action. Title X assigned specific regulatory responsibilities to EPA, HUD, and the Occupational Safety and Health Administration (OSHA) to help reduce lead-based paint hazards in private housing. Title X also imposes specific lead-based paint requirements in federally supported housing, that is, federally owned units and units receiving federal project-based subsidies.

EPA's Renovation and Remodeling proposal is one of several regulatory assignments made under the authority of Title X. It is important not only to consider key regulatory options being considered for this proposal, but to understand the overall regulatory framework

envisioned by Congress in Title X. Therefore, the remainder of this section contains brief overviews of other regulatory provisions called for under Title X which are related to this proposed rulemaking.

#### **40 CFR 745 Subpart D – Lead Based Paint Hazards (TSCA Section 403)**

Section 403 of TSCA directed EPA to establish criteria for identifying lead-based paint hazards, including lead-contaminated household dust, and lead-contaminated residential soils. On June 3, 1998 EPA proposed standards for identifying lead-based paint hazards. The following are the proposed EPA standards for the identification of lead dust and soil hazards:

- EPA is proposing that dust be considered a hazard based on average measurements of the loading of lead in dust. Loading is the mass per unit area of lead present per unit of surface area. The proposed dust-lead hazard standards are 50 micrograms per square foot ( $\mu\text{g}/\text{ft}^2$ ) or higher for uncarpeted floors and 250  $\mu\text{g}/\text{ft}^2$  or higher for interior window sills.
- EPA proposes that bare soil on residential property and child-occupied facilities be considered a hazard based on the yard-wide average concentration of lead. Lead concentration is defined as the relative amount of lead within the soil measured in parts per million (ppm) by weight. The proposed hazard standard is 2000 ppm. EPA recommends removing or permanently covering soil containing lead that equals or exceeds this level.

The proposal also includes standards for clearance following post-abatement dust cleanup. The proposed clearance standards are the same as the dust-lead hazard standards: 50  $\mu\text{g}/\text{ft}^2$  and 250  $\mu\text{g}/\text{ft}^2$  for uncarpeted floors and window sills, respectively. These clearance standards could be applied as clearance criteria to determine adequate cleanup in the R&R rule now being developed.

**NOTE:** There is the existing EPA guidance on lead-based paint hazards issued on July 14, 1994 and subsequently published in the Federal Register on September 11, 1995 (60 FR 47248). This guidance remains EPA's official policy with respect to the identification of lead-based paint hazards until the Agency publishes a final regulation.

#### **40 CFR 745 Subpart E – Residential Property Renovation (TSCA Section 406(b))**

Section 406(b) of TSCA directed EPA to develop requirements for renovators to distribute a lead hazard information pamphlet to housing owners and occupants before conducting renovations in pre-1978 housing. The resulting regulation, issued on June 1, 1998, requires persons performing renovations of target housing for compensation to provide a lead hazard information pamphlet to owners and occupants prior to commencing the renovation. This regulation also requires that tenants be provided advance notification on the nature of the renovation activities in common areas of multi-family housing. Generally the regulation applies, with some exclusions, to all compensated renovation, remodeling, and repair activities that

disturb painted surfaces. Exclusions include minor repairs and maintenance activities that disrupt 2ft<sup>2</sup> or less of painted surface, emergency renovation operations, renovation activities taking place in housing determined to be lead free by a certified inspector, lead abatement activities, and renovation activities in most housing for the elderly or disabled.

Due to the above described section 406(b) requirements, contractors conducting renovation activities subjected to the requirements of the proposed Renovation and Remodeling rulemaking will likely have provided owners and occupants with the lead hazard information pamphlet prior to the renovation being conducted.

**40 CFR 745 Subpart L – Lead-Based Paint Activities and Subpart Q -- State and Indian Tribal Programs (TSCA Section 402(a))**

Section 402(a) of TSCA directed EPA to ensure that individuals conducting lead-based paint activities in target housing, buildings, and other structures are properly trained and certified, that training programs providing instruction in such activities are accredited and that these activities are conducted according to reliable, effective and safe work practice standards. The final rule titled “Requirements for Lead-Based Paint Activities” was published on August 29, 1996 and will be fully implemented on March 1, 2000 for target housing and child-occupied facilities.

40 CFR 745 Subpart L, which applies only in States and Tribes that do not apply for and receive authorization to operate their own programs under Subpart Q, contains several key elements, including:

- Training and certification requirements to ensure the proficiency of contractors who offer to conduct lead-based paint inspection, risk assessment and abatement services in target housing and child occupied facilities;
- Accreditation requirements to ensure that training programs provide quality instruction in current and effective work practices; and
- Work practice standards to ensure that lead-based paint activities are conducted safely, reliably and effectively.

40 CFR 745 Subpart Q contains several key elements, including:

- Procedures for States and Tribes to apply to EPA for authorization to administer these elements at the State or Tribal level.
- A model state lead program that States and Tribes can use to develop their programs.

The Subpart L regulations developed under TSCA 402(a) specifically exclude renovation, remodeling, landscaping or other activities, when such activities are not designed to permanently eliminate lead-based paint hazards, but, instead, are designed to repair, restore, or remodel a given structure or dwelling, even though these activities may incidentally result in a reduction or elimination of lead-based paint hazards. Furthermore, the definition of abatement does not

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

The Subpart L regulations apply to those activities which are specifically intended to permanently eliminate lead-based paint hazards. Therefore, the Subpart L regulations would not apply to those activities potentially affected by the upcoming R&R proposal. However, Section 402(c) of TSCA does instruct EPA to revise the regulations developed under TSCA section 402(a) to apply to renovation and remodeling activities. EPA will, where applicable, develop for the renovation disciplines certification and accreditation requirements that are administratively similar to those under Subpart L. EPA will consider whether the R&R proposal should include the following abatement work practice restrictions which include the following:

- open flame burning or torching of lead-based paint is prohibited;
- machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint is prohibited unless used with a HEPA exhaust control;
- dry scraping of lead-based paint is permitted only in conjunction with heat guns or around electrical outlets or when treating defective paint spots totaling no more than 2 square feet in any one room, hallway or stairwell or totaling no more than 20 square feet on exterior surfaces; and
- operating a heat gun on lead-based paint is permitted only at temperatures below 1,100 degrees Fahrenheit

#### **40 CFR 745 Subpart F – Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards Upon Sale or Lease of Residential Property (Section 1018)**

Section 1018 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 directed EPA and HUD to jointly issue regulations requiring disclosure of known lead-based paint and/or lead-based paint hazards by persons selling or leasing housing constructed before the phase out of residential lead-based paint use in 1978. Under that authority, EPA and HUD established the following requirements:

- Sellers and lessors of most residential housing built before 1978 must disclose the presence of known lead-based paint and/or lead-based paint hazards in the housing;
- Sellers and lessors must provide purchasers and lessees with any available records or reports pertaining to the presence of lead-based paint and/or lead-based paint hazards;
- Sellers and lessors must provide purchasers and lessees with a federally-approved lead hazard information pamphlet;
- Sellers must provide purchasers with a 10-day opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards before the purchaser is obligated under any purchase contract;
- Sales and leasing contracts must include certain disclosure and acknowledgment language; and
- Agents must ensure compliance with these requirements.

The above disclosure provisions and requirements to provide lead reports/records would be applicable to any environmental sampling reports conducted pursuant to the R&R rule, if such requirements are required under a final R&R rule.

#### **40 CFR 745 Subpart P – Management and Disposal for Lead-Based Paint Debris**

On December 18, 1998 EPA proposed a rule under the Toxic Substances Control Act (TSCA) to provide new standards for the management and disposal of lead-based paint (LBP) debris generated by individuals or firms. The proposal includes a temporary suspension of regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA) which currently apply to LBP debris. The Debris proposal does not address LBP debris generated by homeowners in their own homes.

The proposal would provide new management and disposal standards for generators of LBP debris under TSCA. These standards would be generally less burdensome than current RCRA hazardous waste requirements, yet the standards are reliable, effective, safe, and protective of human health and the environment. The proposed debris standards apply to LBP debris generated as a result of renovation and remodeling, as well as other activities.

#### **29 CFR 1926.62 -- Lead in Construction Standard**

The Occupational Health and Safety Administration through the Lead in Construction standard established worker exposure limits of 50 micrograms of lead per cubic meter of air averaged over an eight-hour workday. In addition the regulation created a worker protection program which includes:

- Hazard determination, including exposure assessment;
- Engineering and work practice controls;
- Respiratory protection;
- Protective clothing and equipment;
- Housekeeping;
- Hygiene facilities and practices;
- Medical surveillance and provisions for medical removal;
- Training;
- Signs; and
- Recordkeeping.

The Lead in Construction standard applies to all construction work where an employee may be occupationally exposed to lead. This includes but is not limited to construction, alternation, repair, painting, and decorating. In general the standards are targeted at the protection of the worker and do not overlap with the requirements being considered for EPA's Renovation and Remodeling proposed rule which seeks to protect occupants. However, the housekeeping requirements do place restrictions on cleanup practices which would also apply to contractors conduction renovation activities as defined by EPA. These requirements call for the

following:

- All surfaces to be maintained as free as practicable of accumulated lead;
- Floors and other surfaces shall wherever possible be cleaned by vacuuming or other methods that minimize the likelihood of lead becoming airborne;
- Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective;
- Where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters and used and emptied in a manner which minimizes the reentry of lead into the workplace; and
- Compressed air shall not be used to remove lead from any surface unless the compressed air is used in connection with a ventilation system designed to capture the airborne dust created by the compressed air.

**24 CFR Part 35 -- Lead-Based Paint Poisoning Prevention in Certain Residential Structures (Section 1012/1013)**

HUD issued a final rule September 15, 1999 which establishes requirements that will control lead-based paint hazards in housing that is financially assisted by the Federal government or sold by the government with certain exceptions. The types of housing covered include the following:

- Federally-owned housing being sold
- Housing receiving a federal subsidy that is associated with the property, rather than with the occupants
- Public housing
- Housing occupied by a family receiving a tenant-based subsidy
- Multifamily housing for which mortgage insurance is being sought
- Housing receiving federal assistance for rehabilitation, reducing homelessness, and other special needs

Exceptions include the following:

- Housing built after January 1, 1978
- Housing exclusively for the elderly or people with disabilities, unless a child under age 6 is expected to reside there
- Zero bedroom dwellings, including efficiency apartments, single-room occupancy housing, dormitories, or military barracks
- Property that has been found to be free of lead-based paint by a certified lead-based paint inspector
- Property where all lead-based paint has been removed
- Unoccupied housing that will remain vacant until it is demolished
- Non-residential property
- Any rehabilitation or housing improvement that does not disturb a painted

surface.

Also excluded are emergency repair actions needed to safeguard against imminent danger to human life, health or safety, or to protect property from further structural damage are exempted. Finally, the requirements do not apply to emergency housing assistance (as for the homeless). Most of the regulation takes effect on September 15, 2000, however, prohibitions against using dangerous methods of removing paint take effect on November 15, 1999.

The rule requires that all deteriorated paint must be stabilized or abated, except when the paint is found not to be lead-based paint or when the deterioration is limited to hairline cracks or small nicks, scratches or nail holes. In addition, "safe work practices" (that is, occupant protection, worksite preparation and specialized cleaning) must be used during stabilization or abatement only when the area of paint being disturbed is greater than:

- 20 square feet on exterior surfaces; or
- 2 square feet in an interior room; or
- 10% of a building component with a small surface area (such as a painted window frame)

Certain methods of removing paint lead-based paint produce high levels of lead dust, and are prohibited in conjunction with this regulation. They are:

- Open-flame burning or torching.
- Abrasive blasting without high efficiency ("HEPA") vacuum local exhaust.
- Machine sanding or grinding without HEPA vacuum local exhaust.
- Heat guns at temperatures above 1100°F.
- Dry scraping (wet scraping should be done instead, except near electrical outlets, where use of water could result in electrocution hazards and except for very small areas of deteriorated paint, such as nail holes and hairline cracks);
- Paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance (according to regulations of the Consumer Product Safety Commission or the Occupational Safety and Health Administration), such as methylene chloride.

Clearance is required after all lead hazard control activities in all HUD programs except for single-family mortgage insurance and small jobs. It involves (1) a visual assessment to assure that there aren't any deteriorated paint surfaces or visible amounts of dust or debris remaining on the property, and (2) dust testing to assure that the standards for lead in dust have been complied with. Dust testing cannot occur until after the housing has passed the visual assessment. If dust lead levels equal or exceed the standards, there should be another cleaning of the spaces and surfaces represented by the failing dust samples.

A clearance examination must be done by a person who was not involved in performing the hazard control work and who is certified (or licensed) as a lead-based paint inspector, risk assessor, or clearance technician in the State or Indian Country in which the housing is located. A

clearance examination can also be done by a person who has been trained but not certified as a clearance technician, provided a certified lead-based paint inspector or risk assessor approves the work of the clearance technician and signs the report of the clearance examination. Paint testing and full lead-based paint inspections must be done by a certified lead-based paint inspector. A risk assessment must be done by a certified risk assessor.

Abatement of lead-based paint or lead-based paint hazards must be done by a certified abatement worker, and the work must be supervised by a certified lead-based paint abatement supervisor. Interim controls of lead-based paint hazards must be done by a person who is trained in accordance with the hazard communication standard (at 29 CFR 1926.59) of the U.S. Occupational Safety and Health Administration (OSHA) and who is either supervised by a certified abatement supervisor or has completed one of several training courses that explain how to conduct such work safely so as not to contaminate the environment or expose occupants to lead.

Remaining regulatory requirements vary, depending on the nature of the Federal involvement (e.g., whether the housing is being disposed of or assisted by the Federal government); the type, amount and duration of financial assistance; the age of the structure (which is associated with the amount of lead in the paint); and whether the dwelling is rental or owner-occupied. A table summarizing the requirements for each type of housing assistance can be found in Appendix A.

There is a fundamental difference between EPA's proposed R&R rulemaking and these HUD requirements. The difference being that the HUD requirements not only seek to control new lead hazards resulting from the disturbance of leaded paint (similar to the objective of EPA's proposal) but also seeks to identify and control existing lead hazards. Because of this difference the HUD requirements include additional regulatory provisions aimed at the identification and elimination of existing lead hazards. These provisions include protocol for the inspection of housing to identify lead hazards, as well as requirements that all deteriorated paint must be stabilized or abated.

Regarding the control of new lead hazards resulting from the disturbance of leaded paint, the HUD and proposed EPA regulation are similar in that they both seek the use of qualified workers and establish requirements for appropriate work practices. EPA is involved in a dialogue with HUD as it develops the proposed R&R rulemaking and will seek to make the two regulatory provisions as complimentary as possible considering the goals and objectives of the rulemaking.

### **3. Options and Approaches for Renovation and Remodeling Regulations**

Congress directed the Agency to revise the lead-based paint activities regulations (40 CFR Part 745 Subpart L) to include renovation or remodeling activities that create lead-based paint hazards. The existing regulations for the abatement of lead-based paint contain four key elements--training, accreditation, certification, and work practice standards -- the purpose of which is to ensure regulated activities are conducted in a safe, effective, and reliable manner.

Using the framework of the existing lead-based paint activities regulations as a starting point the Agency identified components of a proposed regulation addressing renovation and remodeling activities. The components include the four key elements contained in the lead-based paint activities regulations, which this rulemaking will revise, and additional components which highlight key work practice issues. The components are as follows:

1. applicability
2. firm certification
3. individual training and certification
4. accreditation
5. work practice standards
6. prohibited practices
7. exterior clearance
8. interior clearance

For each regulatory component, EPA identified several options. These options can be mixed and matched to create rulemaking approaches or scenarios. For example, an approach based upon the existing lead-based paint activities requirements or Full Regulatory Approach is reflected by the option 1 selection for each component. The Limited Regulatory Approach is created by selecting each option that is presented in **bold faced type**. The Limited Regulatory Approach reflects input from outreach activities over the past 18 months.

When reviewing the potential options, it will be important to note some key regulatory definitions and exemptions to make sure that we are all discussing the options using the same basis. These definitions are given below:

**Child-occupied facility** means a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day-care centers, preschools and kindergarten classrooms.

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

**Lead-based paint free housing** means target housing that has been found to be free of paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight.

**Lead-based paint hazard** means any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as identified by the Administrator pursuant to TSCA section 403.

**Target housing** means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0-bedroom dwelling.

**Emergency renovation operations** means renovation activities, such as operations necessitated by non-routine failures of equipment, that were not planned but result from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, or threatens equipment and/or property with significant damage.

**Renovation** means the modification of any existing structure, or portion thereof, that results in the disturbance of painted surfaces, unless that activity is performed as part of an abatement as defined under current regulation (40 CFR 745.223). The term renovation includes (but is not limited to): the removal or modification of painted surfaces or painted components (e.g., modification of painted doors, surface preparation activity (such as sanding, scraping, or other such activities that may generate paint dust)); the removal of large structures (e.g., walls, ceiling, large surface replastering, major re-plumbing); and window replacement.

When reviewing the potential options, it will be important to note some existing regulatory exemptions that will also apply to this proposed rulemaking. These exemptions are given below:

**Exemptions include:**

- This would not apply to renovations in which a written (lead-based paint free) determination has been made. Lead-based paint free means target housing or child-occupied facilities in which a written determination has been made by an inspector (certified pursuant to either Federal regulations at §745.226 or a State or Tribal certification program authorized pursuant to §745.324) that the components affected by the renovation are free of paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight, where the renovator has obtained a copy of the determination.
- This would not apply to persons who perform these activities within residential dwellings that they own, unless the residential dwelling is occupied by a person or persons other than the owner or the owners immediate family while these activities are being performed

### **3.1 Applicability**

A renovation and remodeling proposed rule may apply to individuals and firms engaged in renovation and remodeling activities in all or certain housing built before 1978, the year lead-based paint was banned. Under all of these options, the regulated parties may include residential rental property owners and managers, general contractors, and special trade contractors such as painters, plumbers, carpenters, and electricians who perform renovation and remodeling activities on the applicable housing stock. Possible options include:

- Option 1:** All pre-1978 housing
- Option 2: All pre-1978, rental housing only
- Option 3: All pre-1960 housing
- Option 4: All pre-1960, rental housing only

Possible exemptions include: 1) Work involving minor repair or maintenance, disturbing less than two square feet of painted surfaces (such as a small electrical or plumbing job), and 2) Emergency renovation projects (any follow-up renovation and remodeling needed after the initial work for an emergency project would not be exempt).

### 3.2 Certification of Firms

In order to conduct regulated renovation and remodeling activities, EPA may require a firm to be certified by EPA or an authorized state. Certification of firms may require the firm to be certified and to hire only employees with at least minimal requirements or that are certified. These firms would only include those who the rule is applicable, such as a firm's renovation and remodeling activities on housing built prior to 1978 (Option 1). If a contractor only works on newer homes, such as those built after 1978, then, they would not be required to be certified. These certification requirements could apply to:

- Option 1:** All renovation and remodeling firms
- Option 2: Only firms involved in large-scale surface preparation or demolition
- Option 3: No firms

### 3.3 Training and Certification of Individuals

EPA may require individuals engaged in regulated renovation and remodeling activities to complete an accredited training course and be certified by EPA or an authorized state. Certification and training of individuals and firms engaged in lead-based paint renovation activities may be required to become a certified by EPA as a dust clearance technician, or renovation and remodeling worker. Certification requirements for a dust clearance technician, or renovation and remodeling worker, may include successfully completing an accredited course in the appropriate discipline and submitting a formal application. Re-certification may also be required to keep abreast of the most current technologies and practices. Possible options include:

- Option 1: Training and certification of all individuals performing regulated renovation and remodeling activities
- Option 2: Training and certification of supervisors performing regulated renovation and remodeling activities only; worker training would be optional
- Option 3:** **Training required for all individuals performing regulated renovation and remodeling activities; no certification requirements**
- Option 4: No training and certification requirements

### 3.4 Accreditation of Training Providers

EPA may require entities that train renovation and remodeling workers to obtain accreditation from EPA or an authorized state. Accreditation for a training program may involve approval of a training firms program documentation, such as, training materials, instructor and student manuals, course agenda; a description of the facilities and equipment to be used; a description of the activities and procedures that will be used for conducting the assessment of hands-on skills for each course and a quality control plan. Some of the requirements for the accreditation of training programs may involve training managers with experience to conduct courses that provide hands-on training and to implement a quality control plan. The Agency may establish some minimum training curriculum and training hour requirements for renovation workers and dust clearance technicians. To become accredited and offer lead-based paint courses instruction in the specific disciplines listed below, training programs may need to ensure that their courses include specific topics and have a minimum amount of training hour requirements. Another requirement may include offering refresher courses for renovation worker and dust clearance technician for a minimal amount of time. Topics to cover may include a review of current safety practices relating to lead-based paint activities, current laws and regulations relating to lead-based paint activities, current technologies relating to lead-based paint activities. The basic options are:

- Option 1:**     **Require all training providers to be accredited**  
**Option 2:**     Do not require training provider accreditation; instead, using the OSHA training approach, require firms to document the training of their employees in key areas specified by the Agency

### 3.5 Work Practice Standards

The current regulations for lead-based paint activities contain prescriptive work practice standards that take into account reliability, effectiveness, and safety. EPA could establish prescriptive work practice standards for renovation and remodeling activities found in the paper entitled "Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual" in Appendix B. These practices include:

- Minimizing and containing the amount of lead-contaminated dust created;
- Restricting occupant access to work sites when dust is present;
- Cleaning-up the site using methods that effectively reduce this dust.

Alternatively, EPA could establish performance-based standards, allowing renovation and remodeling contractors the flexibility to determine how to meet the performance standards [may include a reference to the example performance standards]. Thus, the main options are:

- Option 1:**     Prescriptive containment and cleanup requirements  
**Option 2:**     **Performance-based containment and cleanup requirements (example, interior and exterior fugitive dust restrictions)**  
**Option 3:**     None

### 3.6 Prohibited Practices

Under the current regulations for lead-based paint abatement activities, certain practices are prohibited because of the risks they create. These practices are open flame burning or torching of lead-based paint; machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint *except* when done with HEPA exhaust control; dry scraping of lead based paint *except* around electrical outlets or for any area no more than 2 square feet in any one room, hallway, or stairwell, or for any area no more than 20 square feet on exterior surfaces; and operating a heat gun at 1100 degrees Fahrenheit or higher. For the renovation and remodeling rule, EPA could:

- Option 1: Continue with lead abatement work practice prohibitions described above
- Option 2: Modify the abatement work practices prohibitions to:
  - a) Allow exterior open flame burning or torching of lead-based paint and
  - b) Eliminate restrictions on the use of dry scraping
- Option 3: Modify abatement work practice prohibitions as in option 2 and also allow interior flame burning with some restrictions – see interior clearance, option 2**
- Option 4: Have no restricted practices

### 3.7 Exterior Clearance

EPA could require an exterior clearance following exterior renovation and remodeling. This clearance could include a visual inspection for deteriorated lead-based paint, visual inspection to determine if visible amounts of dust and debris remain, and soil testing for lead contamination. Thus, the options include:

- Option 1: Visual clearance following all exterior renovation and remodeling**
- Option 2: Soil sampling following all exterior renovation and remodeling
- Option 3: No clearance following exterior renovation and remodeling

### 3.8 Interior Clearance

EPA also could require an interior clearance following interior renovation and remodeling. Interior clearance would include a visual inspection of the work area to verify if deteriorated painted surfaces or visible amounts of dust, debris, or residue remain after renovation and remodeling activity, and clearance sampling for lead-contaminated dust. Thus, the options include:

- Option 1: Dust testing following all interior renovation and remodeling
- Option 2: Dust testing following specific jobs involving large-scale surface preparation or demolition and any practice prohibited by the abatement rules – see prohibited practices, Scenario 1, plus visual clearance for all other interior jobs**
- Option 3: Visual clearance following all interior renovation and remodeling

Option 4: No clearance following interior renovation and remodeling

In owner-occupied housing, an exemption may allow the owner to waive any dust clearance sampling requirements in writing. The contractor will be required to keep records of such waiver.

### 3.9 Costs of the Options

Estimates of the rule compliance costs and resulting impacts on affected entities reflect SER comments received during the outreach of the Panel process. In particular, the estimates of training costs were increased after receiving SER feedback and following additional EPA research. SERs also indicated that clearance costs were too low. EPA investigations confirmed this and revised estimates accordingly. Several other issues such as the ability of entities to pass costs on to customers (home owners, renters, etc.), insurance availability and cost impacts, and the impact of delays due to rule requirements (such as testing), will require more in depth research and additional data. EPA will continue to analyze those issues, however, they are not included in the compliance cost or impact estimates. EPA provided responses to the economic issues that the SERs raised during the Panel's outreach and these are detailed in the Q&A document that can be found in Appendix B. EPA will continue to refine the impact analysis of the proposal, utilizing small entity comments on costs and other issues.

The following two tables present EPA compliance cost estimates for the renovation and remodeling rule. Table 1 presents two different scenarios. Scenario 1 is the Abatement or Full Regulatory Scenario, and Scenario 2 is the Limited Regulatory Scenario. For each scenario, the estimated average regulatory compliance cost, the estimated average regulatory compliance cost per R&R event, and the primary requirements under each scenario. For this comparison an R&R "event" is a combination of tasks that occur in the same room at the same general time. Consumers spend an average of approximately \$2,700 per R&R event, in the absence of any costs related to the proposed R&R rule.

EPA has estimated that a rule that applies to all pre-1978 housing would affect 14.5 million interior and 7.9 million exterior R&R events for a total of 22.3 million events per year. These estimates are based on U.S. Census and 1997 American Housing Survey data, with do-it-yourself, non-lead-based paint, and other events excluded as appropriate. EPA also estimates that there are approximately 1.5 million R&R workers, supervisors, and technicians involved in R&R work, 230,000 R&R firms, and 500 potential training providers. Employee and firm turnover rates, by discipline, included in the analysis.

Table 1

## Estimated Costs of Abatement (or Full Regulatory) Approach and Limited Regulatory Approach

	Scenario 1: Abatement or Full Regulatory Scenario	Scenario 2: Limited Regulatory Scenario
Total Regulatory Compliance Cost	\$5,130,000,000/yr.	\$3,115,000,000/yr.
Regulatory Compliance Cost per Event (22.3 million events)	\$230. <sup>00</sup>	\$139. <sup>00</sup>
Category	Scenario 1 Requirements	Scenario 2 Requirements
Applicability	All pre-1978 housing	All pre-1978 housing
Firm Certification	Yes	Yes
Individual Training/Certification	Training and certification for all workers	Training for all workers; no certification
Accreditation	Yes	Yes
Work Practices	Prescriptive	Performance
Prohibited Practices	Abatement	Abatement restrictions, dry scrape & flame OK w/clearance
Exterior Clearance	Visual	Visual
Interior Clearance	Dust testing after all events	Dust testing after major events

Table 2 demonstrates how the estimated regulatory compliance cost of Scenario 2, the Limited Regulatory Approach, would change with changes in specific requirements (regulatory options). The first row for each component presents the option for Scenario 2. For example, for the Individual Training and Certification component, Scenario 2 requires training for all workers but no certification. If this scenario were modified to require both training and certification for all workers, the estimated total regulatory compliance cost would increase by \$39,000,000 a year. The far right column expresses the same modification as an increase of \$26 per average employee (annualized). As another example, Scenario 2 requires that all firms be certified. If certification were required only for firms involved in large-scale jobs, the estimated regulatory compliance cost reduction would be minimal. If, however, certification was not required for any firm, then the estimated total regulatory compliance cost would decline by approximately \$21,000,000 a year or \$92 per firm (annualized). Note that estimated cost decreases indicated by parentheses around the number (e.g., (\$21,000,000/yr.)).

**Table 2**  
**Changes in Regulatory Compliance Estimated Cost by Varying Scenario 2**

<b>Component</b>	<b>Requirements</b>	<b>Total Regulatory Compliance Cost</b>	<b>Regulatory Compliance Cost Per-Unit (event, firm, employee, etc.)</b>
Applicability	All pre-1978 housing	* Scenario 2 * (\$1,140,000,000)	* Scenario 2 * (\$131) per post-60 pre-78 event
	All pre-1960 housing (all R&R firms and workers incl.)	(\$1,221,000,000)	(\$140) per post-60 pre-78 event
Firm Certification	Yes	* Scenario 2 *	* Scenario 2 *
	Yes, large scale jobs only	Minimal cost reduction (\$21,000,000/yr.)	Minimal cost reduction (\$92) per firm, annualized
Individual Training and Certification.	No	* Scenario 2 *	* Scenario 2 *
	Training for all workers, no certification	\$39,000,000/yr.	\$26 per ave. employee, annualized
	Both training and certification for all workers	(\$151,000,000/yr.)	(\$121) per ave. non-superv. empl., annualized
	Train and certify supervisors only	(\$191,000,000/yr.)	(\$128) per ave. employee, annualized
Accreditation	No training or certification	* Scenario 2 *	* Scenario 2 *
	Yes	(\$200,000/yr.)	(\$400) per training provider, annualized
Work Practices	No	* Scenario 2 *	* Scenario 2 *
	Performance	\$576,000,000/yr.	\$26 per event
	Prescriptive	No change if clearance required	No change if clearance required
Prohibited Practices	None	* Scenario 2 *	* Scenario 2 *
	Abatement restrictions, dry scrape and flame OK with clearance	Unknown	Unknown
	Abatement restrictions	Unknown	Unknown
	Abatement restrictions, dry scrape and flame OK	Unknown	Unknown
Exterior Clearance	No restricted practices	Unknown	Unknown
	Visual	* Scenario 2 *	* Scenario 2 *
	Soil sampling (in lieu of visual clearance)	\$393,000,000/yr. (\$787,000,000/yr.)	\$50 per exterior event (\$100) per exterior event
Interior Clearance	None	* Scenario 2 *	* Scenario 2 *
	Dust testing after major events	\$1,399,000,000/yr.	\$150 per minor interior event
	Dust testing after all events	\$675,000,000/yr.	(\$50) per major + \$100 per minor int. event
	Visual after all events (in lieu of DT after major events)	(\$258,000,000/yr.)	(\$50) per major interior event
	Visual after major events (in lieu of DT after major events)	(\$773,000,000/yr.)	(\$150) per major interior event
	None		

#### 4. Industries Potentially Directly Affected by the Proposal

##### 4.1 Small Entities Potentially Affected by the Proposal

Contractors: The proposed rule regulates renovation and remodeling activities that generate lead hazards. As such, firms performing those activities may be impacted. Depending on the selected regulatory option, impacts may include costs associated with firm certification, employee training and required work practices. The small entity impact analysis includes a wide range of R&R disciplines corresponding to six different 4-digit SIC codes as detailed in Table 3. The SBA defines size thresholds for small businesses at the 4-digit SIC level. According to the SBA small business size thresholds, of either \$7 or \$17 million in annual revenue depending on SIC code, over 98% of firms in these disciplines are small.

**Table 3: Potential Industries and Impacts of the TSCA 402(c) - R&R Proposal**

	SIC	SIC Description	SBA Definition of Small	# of Affected Entities <sup>1</sup>	% Small <sup>2</sup>	Potential Impacts
Contractors	1521 <sup>a</sup>	General Contractors - Single-Family Houses	\$17 million	46,182	99.9%	<ul style="list-style-type: none"> <li>● Firm certification</li> <li>● Employee training and/or certification</li> <li>● Work practice standards which may include requirements for:               <ul style="list-style-type: none"> <li>○ containment</li> <li>○ dust minimization</li> <li>○ cleanup</li> <li>○ clearance sampling</li> </ul> </li> </ul>
	1522 <sup>b</sup>	General Contractors - Residential Buildings, Other Than Single-Family, Except Hotel & Motel (pt)	\$17 million	3,737	99.1%	
	1711 <sup>c</sup>	Plumbing, Heating and Air-Conditioning	\$7 million	68,723	98.3%	
	1721 <sup>d</sup>	Painting and Paper Hanging	\$7 million	30,230	99.7%	
	1731 <sup>e</sup>	Electrical Work	\$7 million	45,447	98.2%	
	1751 <sup>f</sup>	Carpentry Work	\$7 million	34,728	99.6%	
Training Providers	SIC	SIC Description	SBA Def. of Small	Number of Entities	% Small	Potential Impacts
	8249 <sup>3</sup>	Vocational Schools NEC (pt)	\$5 million	3,366	97.7%	<ul style="list-style-type: none"> <li>● Training program accreditation</li> </ul>

	SIC	SIC Description	SBA Def. of Small	Number of Entities	% Small	Potential Impacts
Inspectors, Dust Wipe Samplers, Etc.	7389 <sup>4</sup>	Business Services NEC (pt)	\$5 million	52,375	99.1%	<ul style="list-style-type: none"> <li>• Firm Certification</li> <li>• Employee training and/or certification</li> <li>• Work practice standards which may include requirements for: <ul style="list-style-type: none"> <li>○ testing lead concentration of painted surfaces</li> <li>○ clearance sampling</li> </ul> </li> </ul>

	SIC	SIC Description	SBA Def. of Small	Number of Entities	% Small	Potential Impacts
Property Owners and Managers	6513	Operators of Apartment Buildings	\$5 million	48,330	99.1%	<ul style="list-style-type: none"> <li>• Training and/or certification of maintenance staff</li> <li>• Requirements to hire trained and/or certified contractors</li> <li>• Compliance with work practice standards</li> </ul>
	6514 <sup>5</sup>	Operators of Dwellings Other Than Apartment Buildings	\$5 million	9,271	99.7%	
	6531 <sup>6</sup>	Real Estate Agents and Managers, Residential Property Managers (pt)	\$1.5 million	29,144	91.2%	

Note: pt – part of, as in only part of this SIC/NAICS industry is matched to the associated NAICS/SIC industry.

1. Note that the number of entities is the total number of affected entities regardless of firm size. For Contractors, the number of entities is calculated as the sum of entities in the *relevant* six-digit SIC groups, as shown below:

- a: SIC 1521 comprised of the following six-digit SICs: 152131, 152132
- b: SIC 1522 comprised of the following six-digit SICs: 152231, 152232
- c: SIC 1711 comprised of the following six-digit SICs: 171111, 171112, 171116, 171117, 171118, 171120, 171122
- d: SIC 1721 comprised of the following six-digit SICs: 172120, 172123, 172130
- e: SIC 1731 comprised of the following six-digit SICs: 173110, 173120, 173130
- f: SIC 1751 comprised of the following six-digit SICs: 175110, 175120, 175130

For Training Providers, Inspectors, Dust Wipe Samplers, Etc., and Property Owners and Managers the number of entities is based on information at the more encompassing four-digit SIC level, or as noted in footnotes 3, 4, 5, and 6.

2. For Contractors, the percent of entities that meet the SBA definition of “small” is based on the size distribution of entities in the four-digit SIC group. Size distribution information is not available at the six-digit level. For Training Providers, Inspectors, Dust Wipe Samplers, Etc., and Property Owners and Managers, size distribution data was available in a variety of formats. As such it is important to note footnotes 3, 4, 5, and 6 when interpreting the corresponding percentage of “small” entities results.

3. Number of entities is the number of firms subject to Federal Income Tax plus the number of firms that are exempt from Federal Income Tax. The percentage of small firms affected is based on the number of establishments that are subject to Federal Income Tax for SIC 824 "Vocational Schools" as size distribution data was available only at the three-digit SIC level.

4. Inspectors, Dust Wipe Samplers, etc. is likely a very small portion of SIC 7389, and is better characterized by NAICS 541350. The number of entities and size distribution information is based on the more encompassing four digit SIC 7389 due to data availability and consistency with the SBA definition.

5. In this case, size distribution data was available for a set of four related four-digit SIC groups. The percentage of small firms, therefore, was based on the ratio of small businesses for establishments in SIC groups 6514, 6515, 6517, and 6519 ("Other Real Estate Operators and Lessors"), while the number of entities is based on SIC 6514 "Operators of dwellings other than apartment buildings" alone.

6. SIC 6531 is divided into a number of parts (pt). The relevant "part" is 6531(pt) "Real Estate Property Managers". This part is further divided in to sub-groups of which "Residential real estate property manages, and Condominium and cooperative owners associations, are the relevant entities. The number of entities is based on these two smaller sub-groups while the percentage of small firms is based on SIC 6531(pt) "Real Estate Property Managers".

---

**Training Providers:** If the proposed rule includes training, and requires training programs to be accredited, firms that provide training services may be impacted. Firms most likely provide this type of training are a portion of (4-digit) SIC code 7389 (Vocational training). The SBA small business size threshold for this SIC code is \$5 million. Given this definition, over 97% of the firms in this industry are considered small. It is likely that the approximately 177 firms that already provide lead abatement training will offer this training as well, and that an additional 320 training firms will need to seek accreditation to satisfy the estimated demand for training courses.

**Inspectors, Dust Wipe Samplers:** Impacts on these firms may include firm certification, employee training, and work practice requirements related to testing and sampling techniques. Firms that would most likely provide this type of testing service are a very small portion of (4-digit) SIC code 7389 (Business Services), and are better characterized by NAICS 541350 (Building Inspection Services). Because the SBA small business size threshold is defined at the 4-digit SIC level (at \$5 million), our small entity impact analysis is based on the more encompassing SIC 7389. Per the SBA definition over 99% of the firms in SIC 7389 are small businesses.

**Property Owners and Managers:** The impacts on property owners and managers may include costs related to the training "in-house" maintenance employees and the increased repair and maintenance costs attributable to work practices and other requirements specified in the proposed rule. The SBA small business size thresholds are defined as either \$5 million (SIC 6513 and 6514) or \$1.5 million (6531). Using the SBA threshold, over 91% of these firms are considered small. See Table 3 for details.

## 4.2 Small Business Impacts

The Agency's preliminary analysis indicates that this rule may impact a large number of small businesses. For purposes of the Regulatory Flexibility Act and analysis of impacts on small businesses, the Agency is using the definition applied under the Small Business Act (SBA)

which defines small businesses by annual revenue. See Table 3 for detail. The rule's compliance burden may include certification and training expenses, and materials and labor costs associated with work practice standards. Potentially affected entities could include training providers, R&R contractors, lead inspection services firms, and residential property owners/managers. The potentially impacted industries are characterized by a majority of small firms.

### **Important Impact Estimate Assumptions**

The compliance costs are likely to be shared among various entity categories (including the four noted below and indirectly impacted entities such as individual homeowners) based on an entity's ability to "pass costs on" to another entity. Due to data limitations we adopt a conservative assumption that the impacted firms cannot pass *any* compliance costs on to their customers. We assume, for example, that training providers cannot recover the cost of accreditation through increased rates or even volume of students, and while we assume that R&R firms pay to train their workers (along with other compliance costs) they cannot increase the cost of a given renovation. Further, while rental property managers are assumed to incur more expensive renovations (due to the requirements on in-house crews or due to higher costs passed on by the aforementioned impacted R&R firms), they are assumed to be unable to increase rents. As such, we may double (or triple) count some aspects of the economic impact in the small entities analysis presented in this section.

### **Renovation and Remodeling Firms**

- The majority of the proposed rule's impact on R&R firms is related to work practices, clearance, and to a lesser degree training. As such, compliance costs tend to increase proportionately with a firm's volume of Pb R&R "events". Note, however, that many of the firms within the SIC codes presented below derive revenue from non-lead and even non-R&R activities. The largest firms are particularly likely to derive revenue from non-lead R&R sources.
- **Impact of Ltd. Reg option on R&R firms in aggregate**

<b>All firms</b>	<b>2.83%</b>
<b>&lt; SBA threshold</b>	<b>3.30%</b>

### **Dust Inspection Firms**

- A Dust Inspection Technician is a new discipline. EPA's analysis estimates 7,980 individuals will perform these services (if clearance testing is required). These individuals will most likely be employed by building inspection services firms (NAICS 541350) but data is currently only available using SIC categories (Business Services, 7389). The SIC industry data is far more encompassing and includes a large number of firms unrelated to lead dust inspection.
- **Impact of Ltd. Reg option on SIC 7389**

<b>All firms</b>	<b>0.41%</b>
<b>&lt; SBA threshold</b>	<b>0.47%</b>

### Training Providers

- The analysis assumes that the 177 providers currently accredited to offer lead abatement training will also seek accreditation to offer lead R&R training. We estimate that an additional 318 “new” providers will be needed to satisfy the demand for training (under the limited regulatory option) for a total of 500 providers. Lead R&R course accreditation fees are estimated at \$1,595 per provider for a 4 year accreditation or \$429 per provider annualized. This is in addition to the accreditation fees the existing 177 providers pay for lead abatement course accreditations.
- The weighted average impact, including accreditation fees for the new providers and providers currently offering lead abatement courses, is **minimal with no impacts in excess of 1% of revenue per year.**
- The existing 177 “full service” lead abatement training providers will clearly have a higher (than weighted average) overall burden, though only the 12 firms, with annual revenues less than \$250k per year, have a significant impact at 1.2% of annual revenues. Notably, the smallest firms are unlikely to be full service providers, and we assume no additional (tuition) revenue as a result of the either the R&R or 402 (Abatement) Fees Rules.

### Multi-family Property Owners/Managers

- We do not have distributional data on how many units landlords of various (revenue) sizes own/manage, or what other types of properties they own/manage. Due to the data limitations and because the burden is largely on a “per rental unit” basis, we estimate our burden ratio on a percentage of average rent basis. For the preliminary calculation presented below we consider the conservative case in which *all* lead-based R&R work is done by in-house crews.
- Due to the aforementioned data limitations, the analysis of impacts on this entity category is based on a hypothetical “typical” property owner/manager based on national averages. Key inputs are presented below. Based on our approach we estimate that the **compliance costs would be approximately 1% of rental income annually.** The smallest, lowest rent owners who renovate very frequently may, of course, be more adversely impacted.

• Average annual rent for MF building (15 units)	\$93,780
• Average number of units with Pb disturbing R&R in MF building	1.54
• Average number of interior Pb R&R events per unit	2.47
• Average <i>annualized</i> compliance costs of ltd reg option (per building)	
Interior work practice ( 3.8 events per bldg.)	\$247
Exterior work practice ( 1 event per bldg.)	\$50
Interior testing ( 1.54 major events per bldg.)	\$261
Exterior Testing ( 1 event per bldg.)	\$100
Firm Certification (1 per bldg.)	\$92
Employee Training (1 per bldg.)	\$128
TOTAL	\$879
• Average annual impact as % of rental revenue	0.94%

## **5. Small Entity Outreach**

### **5.1 Pre-Panel Conference Calls with Small Entities**

At the onset of pre-panel discussions with SBA and OMB, EPA held three conference calls with potential Small Entity Representatives (SERs) to obtain feedback on the options and alternatives outlined in section 3. A list of the small business representatives and industry organization representatives that participated in the conference calls are provided with the summary of each conference call contained in Appendix C. Prior to the first call, the potential SERs received a packet of information on the Renovation and Remodeling proposal which included background information, the statutory history and requirements, regulatory options for 8 areas, a technical document describing work practices, and a discussion of the role of a SER, copies of the SER outreach material can be found in Appendix B. At the first conference call (September 15), we explained the contents of the package, discussing each document to facilitate the potential SERs review of the material. During the next two conference calls (September 22 and 23), the potential SERs had an opportunity to ask questions and provide feedback on each of the options (summaries of the September 22 & 23 calls are contained in Appendix C).

### **5.2 Panel Outreach with Small Entity Representatives**

The Panel held an outreach meeting with Small Entity Representatives (SERs) on December 3, 1999. Eleven SERs, representing a broad range of small entities from diverse geographic locations, and four association representatives participated in the meeting. SERs had an opportunity to introduce themselves and were asked to briefly discuss their standard cleanup practices. The Panel solicited comments from the SERs on the eight option areas as well as EPA's cost estimates for these options. A summary of the Panel outreach meeting is provided in Appendix C.

## **6. Small Entity Representatives**

EPA, in consultation with SBA, invited 18 SERs to participate in its SBREFA consultation process. The following Table presents the SERs name and affiliation, the activity(s) they perform, their relative size, and the source of their recommendation.

**Table 4: SMALL ENTITY REPRESENTATIVES  
TSCA 402(C) Renovation and Remodeling Proposed Rule**

Name and Address	Activity	# of Employees / Sales Volume	Recommended by:
Jeff Hurst Hurst Total Home, Inc.	Remodeling Contractor	Less than \$1 million	National Association of the Remodeling Industry (NARI)
Brandt Domas Domas & Associates, Inc.	Painting and Decorating Contractor	Less than \$7 million	Painting and Decorating Contractors of America (PDCA)
Paul Corey Paul J. Corey Painting and Decorating	Painting and Decorating Contractor	Less than \$250,000	Painting and Decorating Contractors of America (PDCA)
Bob Hanbury House of Hanbury Builders	Renovation Contractor	Less than 2 million	National Association of Home Builders (NAHB)
Bill Stack Koch Brothers Decorating	Finishing Contractor	Less than \$7 million	Finishing Contractors of America (FCA)
Keith Farnham K&R Christopher, Inc.	Finishing Contractor	Less than \$4 million	Finishing Contractors of America (FCA)
Emma Brown Handypersons, Inc.	Maintenance and Renovation Contractor	Less than \$7 million	United Brotherhood of Carpenters and Joiners of America (UBCJA)
Fred Brenner General Plumbing Corp.	Plumbing Contractor	Less than \$7 million	National Association of Plumbing, Heating, and Cooling Contractors
Fred Quercetti	Multi-family Property Owner	Less than \$1.5 million	National Multi Housing Council
Frank Pietranton/Chris Wallis Peir Assoc. Real Estate	Multi-family Property Owner	Less than \$1.5 million	Institute of Real Estate Management
Richard Baker Baker Environmental Consulting	Trainer and Risk Assessor/Inspector	Less than \$7 million	EPA

Name and Address	Activity	# of Employees / Sales Volume	Recommended by:
Kevin Sheehan Lead Safe Renovations	Maintenance and Renovation Contractor	Less than \$7 million	EPA
Burt Olhiser JEFFCO Painting and Coating, Inc.	Painting and Decorating Contractor	Less than \$7 Million	SBA in response to EPA's formal notification
Kevin Nolan Nolan Painting, Inc.	Painting and Decorating Contractor	Less than \$7 Million	SBA in response to EPA's formal notification
Rhonda Daniels	National Association of Home Builders		SBA in response to EPA's formal notification
Dave Potts	National Electrical Contractors Association		SBA in response to EPA's formal notification
Claudia Harris	National Association of Plumbing, Heating, and Cooling Contractors		SBA in response to EPA's formal notification
Eileen Lee	National Multi Housing Council		SBA in response to EPA's formal notification
David Keene	Mechanical Contractors Association of America		SBA in response to EPA's formal notification

## 7. Summary of Comments from SERs

The Small Business Advocacy Panel for the Section 402(c) of the Toxic Substances Control Act (TSCA) governing renovation and remodeling (R&R) activities affecting lead-based paint rulemaking held an outreach meeting with Small Entity Representatives (SERs) on December 3, 1999. Several SERs submitted written comments to EPA following this meeting, Table 5 identifies these commenters. A summary of the Dec 3<sup>rd</sup> meeting is provided in Appendix C. The complete written comments of the Small Entity Representatives is contained in Appendix D.

**Table 5: List of Written Comments**

<b>Name</b>	<b>Organization</b>	<b>Date Received</b>	<b>Number of Pages</b>
Richard A. Baker	Baker Environmental Consulting, Inc.	12/22/99	4
Patrick Connor, Eileen Lee, and Fred Quercetti	National Multi-Housing Council (NMHC) National Apartment Association (NAA)	12/17/99	8
Paul J. Corey	Paul J. Corey Painting and Decorating	12/17/99	2
Rhonda L. Daniels	National Association of Home Builders (NAHB)	01/07/00	4
Brandt O. Domas	Domas & Associates, Inc.	12/17/99	3
Kevin J. Nolan	Nolan Painting, Inc. (Painting and Decorating Contractors of America)	12/17/99	5
Burt Olhiser	Jeffco Painting & Coating, Inc.	12/20/99	4
Kevin J. Sheehan	Renovation & Restoration	12/20/99	6

This paper summarizes the written comments of the SERs. These comments are organized by the following issues:

- Applicability of the rule,
- Firm certification,
- Individual training and certification,
- Accreditation of training providers,
- Work practices standards,
- Prohibited practices,
- Clearance testing,
- Legal liability and insurance,
- General comments on the economic analysis, and
- Other comments on the R&R rule.

Comments on the costs of specific provisions of the rule are summarized under the relevant issue, while general comments on the economic analysis are summarized under topic #9.

## *7.1 Applicability of the Rule*

### 7.1.1 To What Housing Will the Rule Apply?

Mr. Corey, Mr. Nolan, Mr. Sheehan, Mr. Olhiser, and Mr. Baker state that the regulation should cover all pre-1978 housing. They believe that this approach will lessen confusion and keep the rule consistent with other lead-based paint regulations. Mr. Olhiser also mentions that specifying a year such as pre-1978 housing may help contractors obtain insurance coverage. Mr. Sheehan notes that when work is to be performed in localities where lead-based paint was banned earlier than 1978, owners could institute inspection procedures to identify surfaces with lead-based paint, rather than using a more costly approach of assuming that all painted surfaces contain lead-based paint.

Mr. Connor, Ms. Lee, and Mr. Quercetti suggest that the rule should target the types of pre-1978 properties most likely to contain high concentrations of leaded paint. These high risk categories, they believe, should be based on the year of construction and Census tract data, which are strong indicators of childhood lead exposure. They believe that this approach will be more cost effective than a broader approach, such as regulating all pre-1978 housing. They also suggest that once the program is determined to be successful in high risk properties, EPA could phase it in for other types of properties. In support of this approach, they cited the following:

- The HUD guidelines use a two-tiered approach to testing pre-1978 homes, with more scrutiny applied to pre-1960 construction. EPA has approved this protocol as the basis for state certification programs.
- Reports collected by inspectors in several states have found that less than 30 percent of the post-1960 multi-family housing communities contain lead-based paint. Such paint in these properties is typically found in well-defined locations and built into the matrix of the structure and therefore difficult to remove. HUD studies reportedly show that these lead-based painted surfaces do not pose a hazard because the lead-based paint layer is typically thin and under four layers of intact non-lead-based paint.
- Reports from health departments around the country indicate that the vast majority of reported/investigated cases of elevated blood lead levels in children are from properties built before 1950. The type of rental property most frequently implicated in these cases has one to four units.

Ms. Daniels states that the rule should apply only to pre-1950 housing. She cites several facts in support of her position:

- In the 1940s, dry wall started to replace plaster in home construction and, according to HUD's "Comprehensive and Workable Plan, 1990 Report to Congress," only three percent of wall and ceiling area in homes built with dry wall contain lead-based paint.

- During the 1950s, latex paint replaced most oil paint during the 1950's and latex paint contains less lead than oil paint.
- Pre-1950 homes have higher concentrations of lead in paint than post-1950 homes.
- Ninety-five percent of the white lead used in paint in this century was used before 1950.

### 7.1.2 What Exemptions Should the Rule Contain?

The SERs discussed two exemptions: (1) a de minimis exemption for activities that disturb less than two square feet of lead-based paint; and (2) an exemption for emergency renovations.

Mr. Sheehan asserts that a de minimis exemption is most important to specialty contractors, since the bulk of their work does not disturb areas greater than two square feet. When these contractors disturb larger areas, they are often subcontractors to a general contractor, project manager, or owner agent who must assure that appropriate precautions are taken.

Mr. Sheehan states that a per component de minimis exemption has the advantage of being easy to apply consistently, however a per room or area de minimis exemption is more protective. Mr. Sheehan states that the terms used in the de minimis exemption must be clearly defined. For example, he suggests that the rules should clearly distinguish between unregulated minor repair or maintenance activities and a regulated renovation activity. Mr. Sheehan criticizes EPA's definitions of "renovation" and "minor repairs and maintenance" in the pamphlet "The Lead-Based Paint Pre-Renovation Rule." He believes that HUD's definitions establishing de minimis levels of 20 square feet on exterior surfaces, 2 square feet in interior rooms, and 10 percent of a building component with a small surface area are "clear, distinct and protective."

Mr. Baker also supports a two square feet exemption but does not take a position on whether he favors a per component or per room or area exemption.

Mr. Sheehan supports an exemption for emergency renovations. He believes that only the activities addressing the source of the emergency should be exempt, and that any subsequent work should comply with this regulation. Mr. Baker also supports an exemption for emergency situations. Mr. Baker also believes that clearance sampling should be conducted after completion of activities performed under either an emergency or a de minimis exemption.

### ***7.2 Firm Certification***

Mr. Baker, Mr. Nolan, Mr. Olhiser, and Mr. Sheehan support mandatory firm certification. In the paper distributed to the SERs entitled "Potential Approaches and Options," Option 1 would

require all renovation and remodeling firms to be certified. Mr. Baker supports this proposal, as long as contractors certify that they will use only properly trained individuals to conduct the work and will follow all applicable work practice standards. Mr. Olhiser states that mandatory firm certification would help ensure availability of insurance. Mr. Nolan argues that broad applicability of the certification requirements will help improve standard industry practices regarding lead-based paint.

Mr. Corey and Mr. Olhiser think that certified firms should be required to maintain only one trained and certified individual on staff. This individual would be responsible for training and directing fellow employees in implementing lead-safe practices.

Ms. Daniels states that NAHB opposes certification of firms because it is not justified if individual workers are trained.

Finally, Mr. Domas states that the cost estimates for firm certification are too low.

### ***7.3 Individual Training and Certification***

#### **7.3.1 Who Must be Certified?**

All SERs commenting on this issue supported no certification requirements or certification of supervisors only. Mr. Sheehan and Mr. Connor, Ms. Lee, and Mr. Quercetti oppose any required certification. Mr. Sheehan states that a supervisor should only need to provide proof that he or she has attended the required training. Mr. Connor, Ms. Lee, and Mr. Quercetti state that certification will:

- Impose a high financial burden on small businesses;
- Result in higher fees and more administrative record-keeping;
- Prevent small businesses from working across state lines due to differing state regulations;
- Restrict access to, or the availability of knowledgeable lead-safe workers; and
- Significantly increase the cost of conducting routine work and renovations.

See also their comments under section 3.4.

Mr. Baker supports “licensing” supervisors in R&R firms, but states that such supervisors need not be “licensed/certified” as lead abatement supervisors. Mr. Nolan supports the certification of owners or supervisors, but thinks that certifying all employees would be expensive for small contractors and have limited value. Mr. Olhiser and Ms. Daniels also support requiring only supervisors to be certified.

### 7.3.2 Who Must be Trained?

Mr. Nolan appears to support requiring training for all renovation and remodeling workers. Mr. Connor, Ms. Lee, and Mr. Quercetti support performance-based training for individuals involved in activities that disturb lead-based paint. They also suggest that EPA refine the scope and definition of a “worker” who will be covered by this regulation. They are concerned that the rules could be applied to maintenance workers, housekeepers, and grounds keepers who perform routine maintenance activities on multi-family properties because, for example, such workers may remove leaded dust through routine vacuuming or similar activities.

Mr. Corey, Mr. Baker, Mr. Sheehan, Mr. Olhiser, and Ms. Daniels support training for supervisors only:

- Mr. Corey thinks that a trained supervisor can instruct his or her employees on lead-safe practices. He also states that without government-funded training, small businesses will not train their workers because of the lost time and increase in overhead costs.
- Mr. Baker states that a trained supervisor should be on-site at all times throughout the R&R process to help ensure compliance.
- Mr. Sheehan states that if a trained supervisor is not on-site, for example when one person can perform a job, the worker performing unsupervised work should have the supervisor training.
- Mr. Olhiser states that since risk management decisions are usually centralized, only the supervisor needs to be trained and certified. He also said that training several workers in addition to the owner or manager would be cost-prohibitive for small painting firms.
- Ms. Daniels states that supervisors are responsible for directing workers and, because they are present throughout the project anyway, there would be no additional cost in requiring a trained supervisor to be present on the job site.

### 7.3.3 What Kind of Training Should be Required?

Mr. Nolan states that training can be accomplished in much the same way as training for OSHA, where the firm is responsible for the training and compliance of workers. Mr. Sheehan appears to disagree with this approach based on his comments on firm certification. (See his comments in section 2 above.) In support of performance based training, Mr. Connor, Ms. Lee, and Mr. Quercetti state that their industry has worked closely with OSHA to develop the Lead Advisor, an interactive computer program to assist workers in complying with the OSHA lead in

construction standard. In addition, National Apartment Association/National Multi-Housing Council (NAA/NMHC) commissioned the production of a video training program to augment requirements of the OSHA standard with practical methods for performing “lead-smart” maintenance activities.

Mr. Sheehan states that the training course should have a prescribed curriculum. Mr. Connor, Ms. Lee and Mr. Quercetti disagree. They want the regulations to “recognize trained individuals” and do not think that training must encompass completing a specific course. Instead, the training requirements could be modeled after the certification program for workers who maintain equipment containing refrigerants and the certification program to become a radon tester or radon mitigation contractor. In both cases, the emphasis is on demonstrated proficiency rather than completing a prescribed course. Mr. Connor, Ms. Lee, and Mr. Quercetti also cite remote distance learning, Agency-prepared field guides, and classroom instruction as training options.

Mr. Baker states that the training curriculum should address the hazards of lead, engineering and work practice controls, methods to reduce worker exposure, proper clean-up techniques, and proper waste characterization and disposal methods. Mr. Nolan thinks that general awareness training could consist of a basic understanding of why a clean, contained work site is the way to work lead smart and lead safe.

Ms. Daniels states that EPA has not tested the effectiveness of training in reducing lead poisoning or evaluated the impact of distributing millions of pamphlets to remodeling clients. Ms. Daniels notes that the training program may need to focus only on the information provided in the pamphlet.

#### 7.3.4 What Are the Costs of Training?

Mr. Domas and Mr. Connor, Ms. Lee, and Mr. Quercetti state that EPA has underestimated the costs of training. Mr. Domas states that EPA’s estimate of the wages paid to workers during training, the costs associated with a trainer, and the cost of training materials are too low. He also notes that these expenses are non-billable, non-recoverable costs of sales. Mr. Connor, Ms. Lee, and Mr. Quercetti also disagree with EPA’s calculation of training costs. They are concerned that EPA has not included overtime wage and travel costs. They also disagree with the tuition estimate and cite, as an example, the \$375 tuition cost for an eight-hour lead-based training course.

Mr. Connor, Ms. Lee, and Mr. Quercetti think that EPA should take into account the need for repeat training due to employee turnover. In the apartment industry, turnover is significant for service technicians, supervisors, and on-site property managers, with rates of 70, 50, and 30 percent per year, respectively. They note that a program that includes certification fees and administrative record-keeping will incur substantial costs due to the high turnover rate and suggest that these costs should be reflected in EPA’s analysis.

#### ***7.4 Accreditation of Training Providers***

Mr. Olhiser, Mr. Corey, Ms. Daniels, Mr. Sheehan, and Mr. Baker support requiring training providers to be accredited. No commenters opposed accreditation.

- Mr. Olhiser notes that accreditation establishes accountability regarding training and post-session record-keeping for certification purposes.
- Mr. Corey and Ms. Daniels state that accreditation is necessary to ensure quality control and consistency across different training programs.
- Mr. Sheehan thinks that accreditation is the only way to ensure the delivery of a prescribed curriculum. He also opposes the OSHA training approach asserting that training does not “trickle down” and citing OSHA’s own enforcement program that listed “lack of training” as the number one violation.

Mr. Baker believes that the curriculum should be standardized. He also notes that the person or firm that provides training should have real world knowledge of construction activities.

Mr. Corey states that trade associations should become involved in the accreditation process by encouraging their members to become accredited training providers. He also states that training programs should be trade specific and should be performed at the local or regional level. Mr. Nolan notes that the Painting and Decorating Contractors of America would like to become accredited to provide training.

#### ***7.5 Work Practice Standards***

Eight SERs support performance based standards and one SER supports prescriptive standards. The proponents of performance based standards make the following arguments:

- Mr. Olhiser notes that, unless EPA underwrites the increased costs, prescriptive work practices, including prohibited practices, will not work because contractors will choose lower cost methods than may be prescribed. He also asserts that HUD’s prescriptive work practice standards do not consider the reliability, effectiveness, and safety for the entire regulated community but instead, are designed to ensure that low-skilled workers can work without exceeding permissible lead-exposure levels defined by OSHA.
- Mr. Corey agrees that EPA should take a performance based approach because smart contractors are already providing clean environments for their clients and a prescriptive approach would make such contractors less competitive.
- Ms. Daniels supports this approach because contractors would have the flexibility to manage risks by selecting the practices that they believe are the most effective from a cost and safety perspective.

- Mr. Connor, Ms. Lee, and Mr. Quercetti support the notion of performance based standards and note that OSHA's lead in construction standards already regulate R&R activities.
- Mr. Nolan asserts that prescribed standards will be ignored by some contractors and therefore will stifle good contractors and that performance based standards will encourage innovation in equipment and procedures. He also argues that consumer demand for lead-safe practices is essential to ensuring good industry standards.
- Mr. Sheehan states that the examples of performance based standards presented in the "Potential Options and Approaches" document are acceptable minimum standards to address and accommodate a broad range of jobs. He believes that the wording is flexible enough to allow for contractor flexibility while providing minimum criteria for compliance evaluation purposes.

Mr. Baker supports stringent prescriptive work standards that are flexible enough to allow the use of the practices best suited to each situation, but descriptive enough to ensure that proper and adequate work practices are used.

Mr. Sheehan supports the specific examples of performance based standards listed in the "Potential Options and Approaches" document because they provide minimum protective standards that introduce some degree of containment that can be evaluated at the end of a project. He states that using HEPA vac and wet wash also should be minimum standards. Mr. Sheehan adds that the wording in the second sentence regarding the confinement of any generated lead dust or debris to the work area for exterior renovations should be changed from "to an adjacent property" to "to any adjacent, uncontained area." He also states that owners and contractors can insist on higher level precautionary measures than what is specified in the performance based standards.

Mr. Domas states that prescriptive practices will increase costs dramatically. He explains that customers understand containment and cleanup costs and contractors can readily pass along these costs. However, the costs associated with prescriptive practices would be significant and the contractor will have greater difficulty in passing these costs on to the consumer.

## ***7.6 Prohibited Practices***

### **7.6.1 What Practices, If Any, Should Be Prohibited?**

Some SERs are opposed to prohibiting any practices while other commenters support some prohibitions. Mr. Corey states that he uses many of the paint removal methods that could be prohibited in this regulation, but ensures that his workers guarantee a safe working environment for themselves and a clean, finished product for their clients. He thinks that prohibiting heat removal would make certain jobs, such as preparing a surface for new painting, extremely

difficult, if not impossible. Mr. Nolan asserts that prohibiting certain methods such as dry scraping and sanding would cause many problems since wet sanding does not work and customers want smooth surfaces. Contractors would ignore the prohibition or be forced to use cumbersome and dangerous methods.

Mr. Olhiser asserts that banning work practices would be a less cost-effective way to reduce lead poisoning than instituting performance based work standards. He states that banning work practices to protect the health and safety of low-skilled workers is a worthy goal, but is not cost-effective. Mr. Olhiser thinks that workers who are properly trained to use methods that are currently prohibited can complete projects in a safe, cost-effective manner.

Mr. Nolan opposes a prohibition on open burning. He states that there may be no other practical way to restore old and historic millwork and that EPA has not proven that open flame burning produces any significant lead hazard. Mr. Nolan also states that HEPA-attached sanding equipment could become a practical solution to using unshielded equipment, but that the equipment currently has problems.

Mr. Baker states that EPA should clearly identify and prohibit some R&R practices because they may cause lead poisoning. Mr. Baker thinks that contractors, if given a choice, would not use appropriate engineering controls, work practices, and cleanup procedures, because of the increased cost and time involved with these efforts. He also argues that most people who want R&R projects performed are not willing or able to pay the increased costs.

Mr. Connor, Ms. Lee, and Mr. Quercetti are concerned with EPA not prohibiting certain specific work practices. For example, they state that open flame burning outdoors can release significant levels of lead into the atmosphere and add to the overall environmental lead burden. They are also concerned that EPA's prohibitions for R&R activities could be different than HUD's prohibitions for R&R activities in federally-assisted housing. They believe that:

- If EPA's standards are less stringent than HUD's standards, multifamily property owners and managers would have an unfair burden to ensure that their contractors follow HUD's more stringent standards.
- Different EPA and HUD prohibited practices would be confusing to small businesses.
- The prohibitions should not differ because they should be based on the same sound, scientific data since the health risks of R&R are not affected by whether housing is federally-assisted.
- Title X requires consistency between EPA and HUD.

Mr. Sheehan states that work practices should not be prohibited as long as contractors can meet containment, exposure, and clearance requirements. He also discusses several specific work practices or prohibitions.

- Machine grinding and sanding should require HEPA capture and exhaust control.
- Abrasive blasting and sandblasting should require source capture and/or more extensive containment and cleanup measures.
- Dry scraping and heat guns should require more extensive containment and clean-up for both interior and exterior work.
- Machine and hand sanding following chemical stripping also generates high lead dust levels and therefore should not be considered as a low dust generating task.

## *7.7 Clearance Testing*

### 7.7.1 What Exterior Clearance Requirements Should Be Established?

Mr. Corey, Mr. Olhiser, Mr. Baker, and Mr. Sheehan state that visual inspection should be sufficient for exterior clearance. Mr. Corey asserts that additional requirements would be unnecessary and unduly expensive since most contractors are already doing what they think is necessary to prevent lead dust from entering the home. Mr. Olhiser states that a visible inspection standard will allow contractors and property owners to use their best judgment. Mr. Baker supports an exterior visual clearance requirement if the person conducting the visual clearance is a certified risk assessor and issues a clearance certification and if the clearance standard is similar to “there shall be no visible dust or debris.”

In contrast, Mr. Nolan and Ms. Daniels oppose any exterior clearance requirement. Mr. Nolan thinks that the rule should focus on controlling the areas where lead can enter the home, such as by sealing doors and windows, keeping them closed, and performing daily cleaning. He asserts that EPA could set a reasonable standard that involves capturing as much dust and paint chips as possible and emphasizes cleaning up the work site. Ms. Daniels states that NAHB opposes exterior clearance testing, because it is unnecessary when proper cleanup and containment procedures are used.

Mr. Olhiser, Mr. Sheehan and Ms. Daniels oppose soil or wipe sampling for exterior clearance. Mr. Olhiser does not support these clearance methods because a risk assessor or inspector would have to be employed, which would increase project costs without increasing project safety. He also is concerned that risk assessors and inspectors often have little construction experience. Mr. Sheehan says that he is unaware of data correlating exterior lead-based paint and hazardous soil lead levels. He asserts that soil testing will not provide helpful information about a recently completed job, in part because of the wide range of potential sampling error. Mr. Sheehan believes that there is no reason for the R&R rules to be more protective than the abatement standard, which does not require soil testing. Ms. Daniels asserts that soil sampling would place unnecessary burdens on renovators and have unintended consequences for property owners.

### 7.7.2 What Interior Clearance Requirements Should Be Established?

Four SERs oppose and five SERs support interior dust clearance sampling requirements. Mr. Corey, Mr. Nolan, and Mr. Olhiser oppose wipe sampling as an interior clearance requirement. Mr. Corey and Mr. Nolan state that wipe testing will be time consuming, cumbersome, and cost prohibitive for small entities. Mr. Nolan asserts that even if waivers are granted, they would provide no reassurance to the contractor that the contractor would not be responsible or liable for cleanup. In addition, he believes that tracking and following up on testing and waivers would be costly and smaller contractors would not be able to keep up with these administrative requirements. Ms. Daniels asserts that there are no health-based standards for dust and no standards for dust wipes. She also states that if proper work and cleanup procedures are used, as outlined in EPA's renovation and remodeling pamphlet, interior clearance testing is not needed.

Mr. Olhiser supports a visible inspection clearance requirement. He reports that recent studies indicate that contractors can achieve acceptable cleanup levels if they follow a HEPA vacuum and wet mop cleaning protocol. However, he believes that there may be some value in contractors voluntarily offering owners the option of a wipe sample. If wipe sampling is conducted, however, it would not account for pre-existing conditions.

Mr. Baker believes that clearance sampling should be performed on all projects where lead-based paint and/or lead hazards are known or presumed to be present. In addition, Mr. Connor, Ms. Lee, and Mr. Quercetti believe that requiring a series of dust wipes for multi-family properties is a reasonable regulatory approach. They support the Title X Task Force recommendation for clearance testing after certain jobs on a multi-family property that is

“sufficient to generate a historical basis for understanding (1) the level of lead-containing dust that will be generated by that type of activity and (2) the appropriate technique for reducing any lead-containing dust that is generated to levels below those considered to pose a hazard to health.”

Mr. Connor, Ms. Lee, and Mr. Quercetti believe that the industry needs an objective way to evaluate whether a specific job is likely to generate a lead-dust hazard and an objective method for qualitatively evaluating dust clean-up techniques. Under the Task Force recommendation, clearance testing in a multifamily property would be required after every job until a property owner can demonstrate that its cleaning crews for the particular property consistently pass the clearance test. Once this demonstration is made, the owners could rely on clearance tests in a sample of the cleaned units in that property.

These SERs do not believe that this limited exclusion from clearance testing should apply in non-multifamily properties because professionally maintained apartments have the highest chance of developing a dust wipe history to support lead-safe practices. They appear to support requiring interior clearance testing in owner occupied properties for two reasons:

- A renovation in these properties is more likely than a renovation in a multi-family property to be performed with little awareness of the amount of lead dust generated and how to remove it; and
- Despite its cost, clearance testing is the only way to ensure that hazardous levels of dust do not remain following a renovation.

Mr. Connor, Ms. Lee, and Mr. Quercetti do not believe that any data support the effectiveness of an interior visual clearance. Rather, they assert that data from the §403 rulemaking process demonstrates the inadequacy of visible clearance. They believe that a measurement is needed to determine that washing and vacuuming were performed adequately. They acknowledge that required clearance testing will increase the cost of a job, however, they believe there is no other technique to assure that hazardous levels of lead dust are not left behind.

Mr. Connor, Ms. Lee, Mr. Quercetti and Mr. Nolan state that it is impractical to “close off” a resident’s living area for two or three days while waiting for laboratory results. Mr. Connor, Ms. Lee, and Mr. Quercetti suggest that this delay represents a significant cost to property owners and should be included in EPA’s economic analysis. They also cite a multi-year study of HUD grantees which found that even under abatement conditions where rooms undergoing treatment were sealed off and residents were clearly informed about the dangers of entering such spaces, residents breached the containment areas. Mr. Nolan also said that the delay would be unacceptable to homeowners.

Mr. Sheehan supports interior dust clearance testing. He suggests that, on multi-trade jobs, a general contractor, project manager, or property owner determine who is responsible for clearance. In some cases it may be practical for this contractor to function as the lead supervisor for the entire job.

Mr. Connor, Ms. Lee and Mr. Quercetti also discuss the status of research to evaluate the efficacy of low cost, rapid detection methods for lead or spot testing. They indicate that if such tests found to be reliable, they would reduce the costs associated with interior clearance by eliminating (1) the need to have a testing technician perform the test, (2) lab analysis costs, and (3) the delays from waiting for test results.

### 7.7.3 Who Should Conduct Clearance Testing?

Mr. Sheehan is concerned that a clearance testing requirement will create a large demand for inspectors. He asserts that the number of inspectors will not increase quickly enough to meet the new demand, which will force contractors into non-compliance. Also, he is concerned that the number of clearance testing technicians will not grow quickly enough to meet the new demand this regulation would create. This growth, he asserts, will be limited because clearance testing has the highest risk of legal liability for inspectors.

Mr. Baker states that only certified lead risk assessors should perform clearance testing, in part because of the investments they have made to get certified. Mr. Baker states that currently there

is little lead risk assessment work to do, and therefore certified risk assessors are in need of work. According to Mr. Baker, establishing the discipline of clearance technician would produce less qualified and less competent people to perform the risk assessment work. As for cost of relying on risk assessors, if the clearance sampling market increases, more people will enter the market and drive testing costs down.

#### 7.7.4 Should Baseline Testing Be Required?

Mr. Domas appears to argue that if clearance testing is required, EPA also should require baseline testing to address the potential for existing lead levels. He reports that EPA left out the baseline testing costs from the total estimated costs. He asserts that, because most homeowners are not at home during the day, baseline and clearance testing costs should include the labor costs of at least an hour plus travel costs associated with scheduling and meeting the third party who must take the clearance samples.

### ***7.8. Legal Liability and Insurance Issues***

Mr. Olhiser suggests that making the rule cover all pre-1978 housing and requiring firms to be certified will increase the availability of insurance to R&R contractors. He notes that most R&R contractors' insurance does not cover pollution events, primarily because the contractors incorrectly believe that their liability policies already cover these risks. He also states that suitable insurance policies are rare because insurers are not sure what liability risks to cover.

Mr. Baker does not expect that the liability system will be effective in preventing lead poisoning. He states that most R&R contractors have insurance and/or bonding to cover tort liability and non-performance. Those companies have a far greater economic capacity to withstand litigation than do most homeowners. Mr. Baker thinks that most homeowners who have R&R work performed cannot afford the time and legal expenses necessary to sue to recover damages or have the work performed properly. He also adds that, when a contractor becomes involved in litigation, the contractor often moves to another location or declares bankruptcy and then opens a new R&R business under a new name.

Mr. Domas states that this regulation would make him purchase additional, specific hazard insurance to cover exposure for lead-based paint, pollution, and environmental concerns. Such insurance reportedly would have a minimum annual premium of \$25,000 plus a rate of up to \$80 per \$100 of payroll. Also, Mr. Domas states that when he wants to retire or sell his business he would have to purchase cease of operations insurance to protect himself from future lead-based paint and pollution lawsuits that could occur after retiring or having sold his business.

Ms. Daniels stated that the cost estimate for the rule should include lead specific insurance coverage. She reported that the cost of a rider to eliminate the pollution exclusion on a commercial general liability policy would be \$500 to \$2,000 per year.

### ***7.9 General Comments on the Economic Analysis***

Mr. Domas states that the costs to small businesses calculated by the EPA are grossly underestimated. He believes that small businesses will not be able to pass the costs of the rule on to their customers. If costs are passed on, customers will search out illegitimate businesses that do not comply with the rule, resulting in a large loss of customers for legitimate businesses. Mr. Domas also states that the definition of an event, as discussed by EPA in conference calls, needs further study and definition.

Ms. Daniels states that EPA has not included costs associated with travel, lodging, record keeping on each unit renovated, and insurance (see above).

Based on a survey of the maintenance practices of National Apartment Association and National Multi Housing Council (NAA/NMHC) members, Mr. Connor, Ms. Lee, and Mr. Quercetti think that EPA has underestimated the number of workers and events at rental properties that will be covered under the rule. Their estimate of the number of annual events in pre-1978 multi-family properties that disturb more than 2 square feet of paint is many times higher than EPA's estimate of 2.35 renovation events per year for a 15-unit building. They state that EPA underestimates the number of events by not including common areas and exterior repairs. Also, preliminary information from NAA/NMHC members indicates that the proposed rule would cover from 0.5 to 4.0 repairs per unit, per year, which would add 12.85 to 102.8 million annual covered events that need to be considered in estimating the costs of the rule.

Ms. Daniels also questions EPA's estimate of the number of renovation events per year in multifamily housing. She suggests that, instead of using American Housing Survey (AHS) data, EPA should rely on Census Bureau data from the Property Owners and Managers Survey. She notes that the AHS contains no information about renovations in rental units and had errors in the data for renovations in owner-occupied units. While these errors have been correct in a revised data set issued November 29, 1999, estimates relying on the prior data are questionable.

Mr. Connor, Ms. Lee, and Mr. Quercetti also state that EPA has misconstrued data from the AHS and other sources in estimating costs. EPA's assumptions do not match those made in HUD's analysis of similar activities in federally owned and assisted target housing. They request that EPA revise cost estimates that detail the AHS variables and assumptions used.

### ***7.10 General Comments on the R&R Rule***

Mr. Olhiser states that if this regulation focuses on educating R&R contractors on how to "contain, cleanup, and stage a project so that inhabitants are not exposed to lead," the instances of lead poisoning will decline without "surreptitiously" increasing liabilities and consequent costs to contractors and consumers. Mr. Nolan states that a reasonable approach to lead hazard reduction would involve training for all contractors and a public awareness campaign to help contractors inform their costumers. If the public understands that lead dust could be harmful, they would use professional painting contractors that use lead safe practices.

Mr. Domas reports that many smaller painting companies do not carry business insurance or comply with state and Federal laws and therefore have a price advantage over legitimate businesses. Mr. Nolan expresses a similar concern. Mr. Domas believes that unless EPA incorporates small businesses concerns into the rule, small businesses will most likely not comply. Mr. Nolan expresses concern that any increase in administrative paperwork resulting from the rule, will be met with strong resistance by small contractors.

Mr. Nolan states that residential repainting can be conducted in a lead-safe manner without drastic new regulations. He believes that the public and contractors do not understand why EPA is concerned about R&R lead risks now, since the ban on lead-based paint was imposed 20 years ago and blood lead levels have been declining since then. He does, however, recognize lead poisoning problems in low-income, inner-city neighborhoods. Mr. Nolan argues that the EPA has not provided evidence linking lead poisoning to painting contract work that is sufficient to justify an onerous regulation. The studies that EPA presented as evidence did not reflect the use of “lead-smart/ lead-safe” practices used by some contractors.

Ms. Daniels reports that the NAHB believes that EPA lacks the scientific record to proceed with a rulemaking to require certification and training for renovators performing work on pre-1978 housing. She notes that the number of children with elevated blood lead levels has been declining. She asserts that a small share of the lead poisoning in the 1970s was caused by lead paint because few lead paint abatements were performed then and claims that the vast majority of elevated blood lead levels in the past stemmed from lead in gasoline and solder on food cans. With respect to the regulatory options presented by the Agency, she supports a limited regulatory approach because it would have lower compliance costs and lower housing costs.

Ms Daniels also states that the statement on page 6 of the “Questions and Answers” document, “the Center for Disease Control in 1998 reported there are 890,000 children with” elevated blood lead levels is misleading. The CDC, she explains, reported that during the survey period of 1991 to 1994, 890,000 children had elevated blood lead levels.

## **8. PANEL FINDINGS AND DISCUSSION**

### **8.1 Number and Types of Small Entities**

For a complete description and estimate of the number and type of small entities to which the proposed rule will likely apply, see Section 4. The following small entities may be directly regulated under this proposal:

- Contractors performing renovation and remodeling activities that generate lead hazards.
- Training Providers providing renovation and remodeling training services.
- Risk Assessors, Inspectors and Sampling Technicians involved in the identification of lead-based paint and clearance testing following renovation and remodeling activities.
- Property Owners and Managers of affected housing stock.

## 8.2 Potential Reporting, Record Keeping, and Compliance Requirements

As appropriate, regulated entities may be required to demonstrate that they have met applicable training, certification, and work practice standards by complying with reporting and record keeping requirements. Examples of reporting and recordkeeping requirements that EPA may propose include information demonstrating compliance with certification or accreditation requirements.

## 8.3 Relevance of Other Federal Rules

A discussion of Federal rules related to the Renovation and Remodeling rule is provided in section 2.6 of this report.

## 8.4 Panel Recommendations and Comments for the Options Considered

The Panel considered a wide range of options and regulatory alternatives for providing small businesses with flexibility in complying with potential Renovation and Remodeling requirements. See section 3: *Options and Approaches for Renovation and Remodeling Regulations* of this report for a detailed discussion of the options. As a part of the process, the Panel requested and received comments from the SERs on regulatory options developed by EPA and several additional ideas for compliance flexibility that were suggested by SERs and Panel members. The Panel's recommendations are based on its consideration of the comments received, as well as additional business and technical information.

### 8.4.1 Applicability

Under Title IV of the Toxic Substances Control Act (TSCA) the renovation and remodeling proposed rule may apply to individuals and firms conducting renovation in all or certain housing built before 1978. Congress chose the year 1978 because on February 27, 1978 the Consumer Product Safety Commission banned paints, for consumer use, that contain lead in excess of 0.06 percent of weight (16 CFR 1303).

The majority of SERs commented that the regulation should cover all pre-1978 housing in order to lessen confusion and keep the rule consistent with other lead-based paint regulations (see section 2.6).

Several SERs disagreed and suggested that the rule should target the types of pre-1978 properties most likely to contain high concentrations of leaded paint. They believe affected properties could be identified based on the year of construction and Census tract data and that this would be more cost effective than a broader approach, such as regulating all pre-1978 housing.

The Panel received different opinions from the SERs on the applicability options, and discussed the pros and cons of alternatives.

OMB and SBA believe that the protection of public health may be achieved at significantly lower cost by restricting rule requirements to homes built before 1960. Older homes are more likely to have lead-based paint on at least one surface, to have a higher concentration of lead in lead-based paint, and to have a greater surface area coated with lead-based paint. Homes built between 1960 and 1979 contain only 5% of the National total amount of lead-based paint on interior components, according to the "Report on the National Survey of Lead-Based Paint in Housing" (EPA 747-R95-005, April 1995). In those homes, the average surface area coated with lead-based paint is typically less than in older homes. The "Report on the National Survey of Lead-Based Paint in Housing" reports that Pre-1940 homes have, on average, about three times as much lead-based paint as units built between 1960 and 1979 (EPA 747-R95-005, April 1995). Data from the Bureau of Mines indicate that 97% of the total tonnage of lead carbonate used in paint was used prior to 1960 (cited in "Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing", HUD 1547-LBP). Lastly, even those firms not required to comply with an Renovation and Remodeling rule will have the benefit of EPA guidance on lead safe work practices and will be subject to the requirements of the pre-renovation education rule (40 CFR 745 Subpart E).

EPA believes that restricting the applicability of this rulemaking to pre-1960 housing may not provide adequate protection of public health. EPA understands that the quantity and concentration of lead in paint used after 1960 decreased, however, a large number of these homes have some lead-based paint and even small quantities of such paint can produce hazardous lead contamination. EPA's concerns are further described below:

- 27 million or 76% of homes constructed between 1960 and 1978 contain some lead-based paint. In comparison, of all the homes constructed prior to 1960 just 37 million or 89% contain some lead-based paint. Therefore, 42% of all housing containing some lead-based paint was constructed between 1960 and 1978. (Report of the National Survey of Lead-Based Paint in Housing, 1995)
- To understand how easily leaded dust hazards can be created from jobs disturbing lead-based paint, consider the following example. Suppose renovation work is done on only 1 square foot of painted surface and all the paint inside that square foot is turned into dust by sanding or some other work. If such paint contained 1 mg/cm<sup>2</sup> of lead (minimum quantity of lead to be considered lead-based paint) and if the resultant dust is spread homogeneously it could contaminate over 9,000 ft<sup>2</sup> of flooring even at EPA's existing lead hazard guidance of 100ug/ft<sup>2</sup>.

Additionally, despite the availability of educational materials EPA is still concerned that should housing constructed between 1960 and 1978 be excluded that owners and occupants of such housing may deduce, incorrectly, that their dwelling is free of lead-based paint and associated lead hazards.

*The Panel recommends that EPA request public comment in the proposal on the option of limiting the housing stock affected by the rule to that constructed prior to 1960. Also, the Panel*

*recommends that EPA solicit comments on the pre-1978 option as well as other options that may help to reduce costs while achieving the protection of public health.*

#### **8.4.1.1 Exemptions to Applicability of the Rule**

The SERs discussed two exemptions: (1) a de minimis exemption for activities that disturb less than two square feet of lead based paint; and (2) an exemption for emergency renovations. For the de minimis exemption one SER asserts that:

- A de minimis exemption is most important to specialty contractors, since the bulk of their work does not disturb areas greater than two square feet;
- A per component de minimis exemption has the advantage of being easy to apply consistently. A per room or area de minimis exemption is more protective than two square feet.

One SER believes that HUD's definitions establishing de minimis levels of 20 square feet on exterior surfaces, 2 square feet in interior rooms, and 10 percent of a building component with a small surface area are "clear, distinct and protective."

For the exemption for emergency renovations, one SER believes that only the activities addressing the source of the emergency should be exempt, and that any subsequent work should comply with this regulation. Another SER believes that clearance sampling should be conducted after completion of activities performed under either an emergency or a de minimis exemption.

OMB and SBA also recommend that EPA provide additional exemptions for firms who routinely disturb small amounts of lead paint or do not create lead hazards. They recommend that EPA apply the regulation to firms that regularly perform painting, construction or renovation work (i.e. general contractors, builders, remodelers, and painters) and exempt specialty contractors (i.e. plumbers and electricians) in the proposal. Under this proposed option, these specialty contractors would still be expected to follow lead-safe practices as outlined in HUD and EPA guidance, but would not be subject to certification, training and other regulatory requirements.

*The Panel recommends that EPA include a "de minimis" exemption and an exemption for emergency renovations in the proposal.*

#### **8.4.2 Certification of Firms**

The proposed regulation may require a firm to be certified by EPA or an authorized state or tribal government when performing renovation and remodeling activities on applicable housing. Firm certification will likely require, as part of the application; 1) a statement that the firm will employ appropriately trained and/or certified individuals and follow applicable work practice standards, and 2) payment of a fee as required by statute to recover EPA's administrative and enforcement costs.

The majority of SERs support mandatory firm certification and none opposed this option. SER comments include the following: 1) as a condition of certification firms should certify that they will use appropriately trained individuals to conduct the work and will follow all applicable work practice standards, and 2) broad applicability of the certification requirements will help improve standard industry practices regarding lead-based paint.

*The Panel believes that certification of renovation and remodeling firms would help consumers identify qualified firms. The Panel recommends that EPA attempt to balance the goals and objectives of the statute, with the burden associated with such regulatory requirements, in order to avoid placing compliant firms at an undue competitive disadvantage. The Panel recommends that EPA include firm certification in the proposal.*

### 8.4.3 Training and Certification of Individuals

EPA may propose to require all or some individuals engaged in regulated renovation and remodeling activities to complete a training course and possibly become certified by EPA or an authorized state. The training may be obtained through an accredited training provider (formal training) or possibly by the employer. Certification requirements may include successfully completing training in the appropriate discipline and submitting a formal application. Re-certification may also be required to keep abreast of the most current technologies and practices.

All SERs commenting on this issue supported no certification requirements or certification of supervisors only. Several SERs oppose any required certification and state that certification will:

- Impose a high financial burden on small businesses;
- Result in higher fees and more administrative record-keeping;
- Prevent small businesses from working across state lines due to differing state regulations;
- Restrict access to, or the availability of knowledgeable lead-safe workers; and
- Significantly increase the cost of conducting routine work and renovations.

Regarding training, the majority of SERs support training of renovation and remodeling workers. However, four SERs believe that this training should only be mandatory for supervisors for the following reasons:

- Trained supervisor can instruct his or her employees on lead-safe practices.
- Formal training of all workers is cost prohibitive.
- Because risk management decisions are usually centralized, only the supervisor needs to be trained and certified.

In addition, two of the SERs advocating supervisor training believe that a trained supervisor should be on-site at all times to ensure compliance and that if a trained supervisor is not on-site, for example when one person can perform a job, the worker performing unsupervised work should have the supervisor training.

*The Panel believes that training Renovation and Remodeling workers improves lead safe work practices. However, the Panel understands that the rate of worker turnover in the industry is high and firms would probably incur greater training and certification costs. The option of limiting formal training requirements to a job supervisor (or other clearly defined responsible party) provides a less burdensome alternative. The Panel recommends that EPA include formal training for supervisors (or other clearly defined competent person) and informal training for all others in the proposal.*

#### **8.4.4 Accreditation of Training Providers**

EPA may propose to require entities that train renovation and remodeling workers to obtain accreditation from EPA or an authorized state. Accreditation for a training program may involve review and approval of the following; training materials, instructor and student manuals, course agenda; a description of the facilities and equipment to be used; a description of the activities and procedures that will be used for conducting the assessment of hands-on skills for each course and a quality control plan. Some of the requirements for the accreditation of training programs may involve training managers with experience to conduct courses that provide hands-on training and to implement a quality control plan. To become accredited and offer lead-based paint course instruction training programs may need to ensure that their courses include specific topics and have a minimum amount of training hour requirements.

The SERs support requirements for the accreditation of training providers. No SERs opposed accreditation. The SERs note the following:

- Accreditation establishes accountability regarding training and post-session record-keeping for certification purposes.
- Accreditation is necessary to ensure consistency across different training programs.
- Accreditation is the only way to ensure the delivery of a prescribed curriculum.
- Trade associations should become involved in the accreditation process by encouraging their members to become accredited training providers.

*The Panel believes that accreditation provides a mechanism to ensure quality control of training programs, to establish a level of essential training, and to facilitate reciprocity between states. The Panel is also concerned about imposing undue burden on training providers. The Panel recommends that EPA include accreditation of training providers in the proposal.*

#### **8.4.5 Work Practice Standards**

Current EPA regulations for lead-based paint abatement activities contain specific prescriptive work practice standards that take into account reliability, effectiveness, and safety. EPA could propose to establish prescriptive work practice standards or performance based standards for renovation and remodeling activities. A prescriptive regulation would require contractors to follow specific detailed procedures, whereas, a performance based regulation

would establish standards which would allow contractors to choose cost effective techniques to accomplish such standards.

The majority of SERs support performance based standards. The proponents of performance based standards make the following arguments:

- Unless EPA underwrites the increased costs, prescriptive work practices will not work because contractors will choose lower cost methods than may be prescribed. These cost differences could be substantial depending on work performed.
- Prescriptive work practice standards do not consider the reliability, effectiveness, and safety for the entire regulated community but instead, are designed to ensure that low-skilled workers can work without exceeding permissible lead-exposure levels defined by OSHA.
- Knowledgeable contractors are already providing clean environments for their clients and a prescriptive approach would make such contractors less competitive.
- Performance based standards will encourage innovation in equipment and procedures.

The SER opposed to performance based standards supports prescriptive standards which are flexible enough to allow the use of the practices best suited to each situation, but descriptive enough to ensure that proper and adequate work practices are used.

*The Panel recognizes that a prescriptive approach may clearly identify methodologies to minimize lead hazards. However, prescriptive practices may not work effectively in some situations a contractor may face. The Panel believes that a performance based approach would provide the contractor with greater flexibility to manage risk in a cost effective manner while minimizing the introduction of lead hazards given a particular situation. Therefore, the Panel recommends that EPA include performance based standards in the proposal.*

#### **8.4.6 Prohibited Practices**

EPA may propose to prohibit certain work practices as recommended in HUD's 1995 publication titled "Guidelines for the Evaluation and Control of Lead-based Paint Hazards in Housing" because they may produce high levels of lead dust, which could be difficult, if not impossible to clean up.

Some SERs are opposed to prohibiting any practices while others support some prohibitions. SERs opposed to the prohibition of work practices state the following:

- These practices are commonly used during renovation work and prohibiting such practices could make certain jobs, such as preparing a surface for new painting, extremely difficult, if not impossible.
- Prohibitions would be a less cost effective than instituting performance based work standards.
- There may be no practical way to restore old and historic millwork other than open flame burning.

- Prohibiting dry scraping and sanding would cause many problems since wet sanding tends to raise the grain of wood surfaces preventing a smooth surface which consumers demand.
- Workers who are properly trained to use methods that are currently prohibited can complete projects in a safe, cost-effective manner.
- Work practices should not be prohibited as long as contractors can meet containment, exposure, and clearance requirements.

SERs supporting prohibited practices feel that contractors using such practices would not use appropriate engineering controls and cleanup procedures because of the increased cost and time involved with these efforts. Several SERs are concerned that these practices can release significant levels of lead. Also, several SERs are concerned about any differences between EPA's prohibitions for R&R activities and HUD's prohibitions for lead hazard control activities in federally-assisted housing for the following reasons:

- If EPA's standards are less stringent than HUD's standards, multifamily property owners and managers would have an unfair burden to ensure that their contractors follow HUD's more stringent standards.
- Different EPA and HUD prohibited practices would be confusing to small businesses.
- The prohibitions should not differ because they should be based on the same sound, scientific data since the health risks of R&R are not affected by whether housing is federally-assisted.
- Title X requires consistency between EPA and HUD.

The SER's commented that such prohibitions may increase cost, decrease quality, and impede cleanup efforts. Such prohibitions may also cause homeowners and building owners to seek contractors willing to avoid compliance with such prohibitions. These contractors would likely avoid compliance with other lead safe work practices as well leading to a reduction in public health, rather than an increase. SBA and OMB recommend that EPA not prohibit work practices, relying instead on the effectiveness of containment and cleanup work practice requirements.

*The Panel recognizes concerns over the feasibility of prohibiting or severely restricting common renovation practices when cost-effective alternatives may not exist. The Panel recognizes that prohibiting such practices could adversely affect the cost and quality of renovations. However, the Panel is also concerned about the potential risks associated with the release of significant amounts of lead contaminated dust that may be associated with such activities.*

*The Panel notes that proper training, in combination with reasonable performance, containment and cleanup requirements may adequately address the introduction of new hazards. The Panel recommends that EPA request public comment on the prohibition of work practices and seek comment regarding the cost, benefit and feasibility of such prohibitions.*

### 8.4.7 Exterior Clearance

EPA could propose to require an exterior clearance following exterior renovation and remodeling. This clearance could include a visual inspection or soil testing for lead contamination. A visual inspection would evaluate whether visible amounts of dust and debris remain on exterior horizontal surfaces and if visible paint chips remain on the ground below the work area. Exterior renovation, remodeling, and repainting tasks can create lead-contaminated debris (e.g., paint chips) and lead-contaminated dust levels in soil that are equivalent to those produced during lead-based paint abatement. EPA regulations applicable to exterior lead abatement work call for a visual inspection (40 CFR 745.227 (e)(8)(v)(c)) and do not require soil lead testing.

Four SERs state that visual inspection should be sufficient for exterior clearance and one SER opposed any exterior clearance requirement. Some of the reasons to support a visual inspection were:

- additional requirements would be unnecessary and unduly expensive, or
- a visible inspection standard will allow contractors and property owners to use their best judgment, or
- soil levels taken post-renovation may reflect high pre-renovation lead levels, and not lead contributed by the renovation work.

One SER believes that visual inspection is appropriate only if conducted by a certified risk assessor who issues a clearance certification and if the clearance standard is similar to “there shall be no visible dust or debris.”

In contrast, one SER opposes any exterior clearance indicating that the rule should focus on controlling the areas where lead can enter the home, such as by sealing doors and windows, keeping them closed, and performing daily cleaning. Two SERs oppose soil or wipe sampling for exterior clearance because of the increased costs associated with a risk assessor or inspector would have to be employed or because it will not provide helpful information about a recently completed job, in part because of the wide range of potential sampling error.

*The Panel recognizes the potential costs associated with exterior soil sampling and the difficulty a contractor may have in achieving clearance due to existing soil lead contamination from the deterioration of lead-based paint, deposition resulting from industrial sources, and leaded gasoline. Also, the Panel does recognize that other Federal regulations (ie. the lead-based paint abatement regulation at 40 CFR 745 subpart L) only require visual clearance following abatement and that consistency with such regulation will be an important factor for consideration. The Panel recommends that EPA include in the proposal a visual inspection provision for exterior clearance.*

#### 8.4.8 Interior Clearance

EPA may propose to require an interior visual inspection and/or dust clearance testing following renovation and remodeling activities because this work often creates lead-contaminated dust levels in excess of established hazard criteria.

Three SERs oppose and five SERs support interior dust clearance sampling requirements. SERs that oppose dust sampling requirements stated that:

- Wipe testing will be time consuming, cumbersome, and cost prohibitive for small entities;
- Even if waivers are granted, they would provide no liability protection for the contractor. Also, such waivers would be costly and involve administrative requirements; and
- It is impractical to prevent re-occupancy for two or three days while waiting for laboratory results,
- It is sometimes difficult to achieve the clearance levels in practice, particularly if the level is as low as 50 ug/ft<sup>2</sup>, the EPA proposed level for the §403 rule.

One SER supports a visible inspection clearance requirement because of recent studies indicating that contractors can achieve acceptable cleanup levels if they follow a HEPA vacuum and wet mop cleaning protocol. However, the SER also believes that there may be some value in contractors voluntarily offering owners the option of a wipe sample.

Five SERs support clearance sampling testing. The following are some of their comments:

- Requiring a series of dust wipes for multi-family properties is a reasonable regulatory approach;
- The industry needs an objective way to evaluate whether a specific job is likely to generate a lead-dust hazard and an objective method for qualitatively evaluating dust clean-up techniques;
- No data supports the effectiveness of an interior visual clearance; and
- If wipe sampling is conducted it would not account for pre-existing conditions.

The SERs raised the issue of responsibility for clearance testing during projects involving multiple trades and contractors. A SER in response notes that during such jobs a general contractor, project manager, or property owner would determine who is responsible for clearance.

*The Panel recognizes that the issue of interior clearance has raised many concerns related to the type of clearance (visual or dust testing). These concerns include: the time and expense involved, who would be responsible to conduct clearance, and accounting for existing lead contaminated dust. Recent studies provide some evidence that low clearance levels (e.g. 50 ug/ft<sup>2</sup>) can be achieved following a thorough and professional clean-up, however, there is*

*contrary evidence in other studies that speak to the difficulty in achieving floor clearance levels as high as 200 ug/ft<sup>2</sup>.*

*The Panel understands that dust clearance testing is the best method currently available to quantify the presence of a lead dust hazard and that visual examination alone may not be adequate to determine the presence of such a hazard. A study being conducted in the State of Maryland to evaluate the effectiveness of visual clearance supports this latter conclusion. Preliminary study results of dust lead samples taken following visual clearance of work areas in which lead risk reduction activities were conducted indicate that the majority of dust lead levels are greater than EPA dust hazard guidance.*

*SBA is concerned about the cost and feasibility of consistently achieving low interior clearance requirements based on currently available field evidence. SBA introduced a new option to the Panel which would include a specific cleanup methodology followed by a visual clearance requirement as a alternative to dust clearance testing. The Panel recommends that EPA include this new option in the proposal and take comment on the merits of all the interior clearance options in the proposal. The Panel also recommends that EPA take comment on options for clearance that are less costly and less burdensome and yet still demonstrate the absence of lead hazards.*

## **8.5 Additional Issues**

The SER written comments also included issues related to economics and the development of the cost estimates. Several of the comments echoed the earlier comments received during the outreach efforts. EPA had previously responded to these comments and made changes to the estimates. SERs representing multifamily property owners and managers questioned the impact estimates for those entities. The estimates presented in this report reflect some of the revisions of the impacts on multifamily property owners. The National Association of Home Builders also noted that the Census Bureau issued a revision of the American Housing Survey (AHS 1997) in late November of 1999. EPA confirmed that the data had been revised, but was not able to include the November 1999 revision of the AHS data into the estimates presented in this document. Though initial EPA calculations do not suggest that the November 1999 AHS data revisions were substantial, the revised data will be incorporated into future economic analysis of the R&R rule.

*The Panel recommends that EPA continue to refine the impact analysis of the proposal, utilizing comments from affected industry and other parties related to costs and other issues. Additionally, with regard to the EPA study titled: "Lead Exposure Associated with Renovation and Remodeling Activities: Phase III" (EPA 747-R-99-002), the Panel recommends that EPA do further analysis of the existing Phase III data to analyze the impact of R&R activities by contractors, and building owners (those persons who would be subject to this regulation).*

Although this Panel was convened for the proposed R&R rule, the Panel also discussed the section 403 hazard standard because it includes standards for clearance following post-abatement dust clean-up which may be used to determine adequate clean-up in the R&R rule

now being developed. The section 403 lead hazard standards rule is a separate rule that was proposed in June 1998, and is currently under final development by EPA. During the public comment period on the proposed hazard standards, the Agency received nearly 500 comments, several of which suggested alternative analytical approaches. As with all rules, EPA is assessing every comment received on the proposed hazard standards, and, after considering all viewpoints, will issue the final hazard standards before the end of 2000. As suggested in comments submitted on the 403 proposal, OMB and SBA recommend that EPA reassess the IEUBK and Empirical Models, evaluating each model's predicted distribution of blood lead levels against distributions observed in the Rochester study, the pooled analysis by Lanphear et al. and NHANES III, and make appropriate adjustments to improve the ability of the models to predict the number of children with elevated blood lead.

i

**APPENDIX A:**  
**SUMMARY OF SECTION 1012/1013 REQUIREMENTS**

0

**Final HUD Regulation Setting Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Housing Receiving Federal Assistance and Federally Owned Residential Property Being Sold**

**SUMMARY OF REQUIREMENTS**

**Note: Clearance is always required after abatement, interim controls, paint stabilization, or standard treatments.**

Subpart of Rule/Type Program		Construction Period	Requirements
C.	Disposition by Federal Agency Other Than HUD	Pre-1960	<ul style="list-style-type: none"> <li>• LBP inspection and risk assessment.</li> <li>• Abatement of LBP hazards.</li> <li>• Notice to occupants of inspection/abatement results</li> </ul>
		1960-1977	<ul style="list-style-type: none"> <li>• LBP inspection and risk assessment.</li> <li>• Notice to occupants of results</li> </ul>
D.	Project-Based Assistance by Federal Agency Other Than HUD	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Risk assessment.</li> <li>• Interim controls.</li> <li>• Notice to occupants of results</li> <li>• Response to EBL child.</li> </ul>
F.	HUD-Owned Single Family Sold With a HUD-Insured Mortgage	Pre-1978	<ul style="list-style-type: none"> <li>• Visual assessment.</li> <li>• Paint stabilization.</li> <li>• Notice to occupants of clearance.</li> </ul>
G.	Multifamily Mortgage Insurance		
	1. For properties that are currently residential	Pre-1960	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Risk assessment.</li> <li>• Interim controls.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance.</li> </ul>
		1960-1977	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Ongoing LBP maintenance.</li> </ul>
2. For conversions and major renovations.	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• LBP inspection.</li> <li>• Abatement of LBP.</li> <li>• Notice to occupants.</li> </ul>	

## SUMMARY OF REQUIREMENTS (continued)

Subpart of Rule/Type Program	Construction Period	Requirements
H.		
Project-Based Assistance (HUD Program)		
1. Multifamily property receiving more than \$5,000 per unit per year	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Risk assessment.</li> <li>• Interim controls.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance and reevaluation.</li> <li>• Response to EBL child.</li> </ul>
2. Multifamily property - receiving less than or equal to \$5,000 per unit per year, and single family properties	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Visual assessment.</li> <li>• Paint stabilization.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance.</li> <li>• Response to EBL child.</li> </ul>
I.	Pre-1978	<ul style="list-style-type: none"> <li>• HUD-Owned Multifamily Property</li> <li>• Provision of pamphlet.</li> <li>• LBP inspection and risk assessment.</li> <li>• Interim controls.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance.</li> <li>• Response to EBL child.</li> </ul>
J.		
Rehabilitation Assistance		
1. Property receiving less than or equal to \$5,000 per unit	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Paint testing of surfaces to be disturbed, or presume LBP</li> <li>• Safe work practices in rehab.</li> <li>• Repair disturbed paint.</li> <li>• Notice to occupants.</li> </ul>
2. Property receiving more than \$5,000 and up to \$25,000	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Paint testing of surfaces to be disturbed, or presume LBP</li> <li>• Risk assessment.</li> <li>• Interim controls.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance if HOME or CILP.</li> </ul>
3. Property receiving more than \$25,000 per unit	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Paint testing of surfaces to be disturbed, or presume LBP</li> <li>• Risk assessment.</li> <li>• Abatement of LBP hazards.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance.</li> </ul>

## SUMMARY OF REQUIREMENTS (continued)

Subpart of Rule/Type Program		Construction Period	Requirements
K.	Acquisition, Leasing, Support Services, or Operation	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Visual assessment.</li> <li>• Paint stabilization.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance.</li> </ul>
L.	Public Housing	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• LBP inspection.</li> <li>• Abatement of LBP.</li> <li>• Risk assessment if LBP not yet abated.</li> <li>• Interim controls if LBP not yet abated.</li> <li>• Notice to occupants.</li> <li>• Response to EBL child.</li> </ul>
M.	Tenant-Based Rental Assistance	Pre-1978	<ul style="list-style-type: none"> <li>• Provision of pamphlet.</li> <li>• Visual assessment.</li> <li>• Paint stabilization.</li> <li>• Notice to occupants.</li> <li>• Ongoing LBP maintenance.</li> <li>• Response to EBL child.</li> </ul>

**APPENDIX B:**

**SER OUTREACH MATERIAL**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

September 10, 1999

**TO:** SBREFA Panel Members

**FROM:** Mike Wilson, EPA Office of Prevention, Pesticides and Toxic Substances

**SUBJECT:** Welcome, meeting logistics, and briefing packet

---

### **Welcome and Background**

The U.S. Environmental Protection Agency's Office of Prevention, Pesticides and Toxic Substances is pleased that you are willing to act as a representative of small entities likely to be regulated under a forthcoming proposed rulemaking addressing lead-based paint hazards associated with renovation and remodeling activities. Your participation in the rulemaking process will help ensure that EPA understands the concerns of small business and other small entities. EPA values this input. The Agency has an ongoing commitment to minimize the burden of its rules on small entities while meeting statutory mandates.

You have agreed to provide input on a rulemaking that EPA is developing under the Toxic Substances Control Act (TSCA). In 1992, Congress amended TSCA by passing the Residential Lead-Based Paint Hazard Reduction Act (Title X). TSCA Section 402(c) directs EPA to conduct a study of lead-based paint hazards created by renovation and remodeling activities. EPA is directed to use the results of the study and consultation with stakeholders to determine which activities should be regulated. The study, completed earlier this year, demonstrated that large amounts of lead dust may be produced by many renovation and remodeling activities and that such activities are associated with an increased risk of elevated blood lead in children. Based on these data, EPA is developing a proposed rulemaking, which is planned to be published in the Summer of 2000.

You have been asked to participate in this proposed rulemaking under a framework

**001**

established by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). This law expands the opportunities for small entities to participate in the development of certain regulations. EPA is convening a Small Business Advocacy Review Panel for this rulemaking. The goal of the panel is to explore ways to minimize significant burdens on regulated small entities while achieving the public purpose to be served by regulation. To establish the panel, EPA contacted several professional and trade groups that represented industries that would be affected by the rulemaking and asked them to nominate one or more individuals. EPA then contacted the nominees and selected at least one individual from each group based on factors including their availability to participate in the Panel and their geographic diversity. A preliminary list of panel members include:

- Richard Baker, Baker Environmental Consulting (Inspector, Risk Assessor, Trainer)
- Fred Brenner, General Plumbing Corporation (Plumbing-Heating-Cooling Contractors-National Association)
- Emma Brown, Handypersons, Inc. (United Brotherhood of Carpenters and Joiners of America)
- Paul Corey, Paul J. Corey Painting and Decorating (Painting and Decorating Contractors of America)
- Brandt Domas, Domas and Associates, Inc. (Painting and Decorating Contractors of America)
- Keith Farnham, K&R Christopher, Inc. (Finishing Contractors of America)
- Jeff Hurst, Hurst Total Home, Inc. (National Association of the Remodeling Industry)
- Bill Stack, Koch Brothers Decorating (Finishing Contractors of America)
- Frank Pietranton, Pier Associates Real Estate (Institute of Real Estate Management)
- Fred Quercetti, Property Owner (National Multi Housing Council)

### Conference Call Meetings

To obtain input from the Panel, EPA will convene at least three conference calls. The date, time, and purpose of each call is listed below.

- **First conference call.** Wednesday, September 15, 1999, 1:00 pm EDT. The purpose of this call is for EPA to provide a background briefing to all panel members regarding the proposed rulemaking, review the materials sent to each panel member, and answer questions about the nature of the materials provided (substantive questions about the proposed rulemaking will be addressed in the next two calls).

- **Second conference call.** Wednesday, September 22, 1999, 1:00 pm EDT. The purpose of this call is for panel members to provide comments and raise issues of concern to EPA. EPA's role will be to listen to your comments and concerns, clarify points of confusion, and answer questions where appropriate.
- **Third conference call.** Thursday, September 23, 1999, 1:00 pm EDT. As with the previous day's call, the purpose of this call is for panel members to provide comments and raise issues of concern to EPA. EPA's role will be to listen to your comments and concerns, clarify points of confusion, and answer questions where appropriate.

EPA has requested support from ICF Consulting for this SBREFA panel process. ICF's role includes managing logistics for the conference calls, facilitating the conference calls, taking notes during the conference calls, and providing EPA with detailed conference call summaries, as well as tracking action items.

### **How to Access the Conference Call**

The conference call process itself is straightforward. On the day of each conference call a couple of minutes before 1:00 pm EDT dial the conference call telephone number 1-888-214-7649. You will automatically be placed into the conference call and an electronic voice will instruct you to identify yourself. A beep will indicate to those already on the conference call that another person has joined. We will provide an agenda for the conference calls on September 22 and 23 at least one day in advance of the calls (i.e., by Tuesday September 21).

### **Materials Enclosed In This Briefing Package**

Enclosed in this package are the following materials that will help you better understand the issues and options concerning the proposed rulemaking:

- **Agenda** for the September 15<sup>th</sup> conference call meeting.
- **Background on Forthcoming Renovation and Remodeling Rulemaking.** This document provides background on the health rationale and statutory requirements for developing the proposed rule.
- **Questions and Answers for Renovation and Remodeling Options.** This document provides more detailed information regarding specific aspects of the options and approaches presented.

- **Options and Approaches for Renovation and Remodeling Regulations.** This document identifies several regulatory options for each of the eight principle components of the proposed rule being developed.
- **Estimated Costs of Renovation and Remodeling Rule Approaches.** This document highlights estimated costs associated with two different rule scenarios.
- **Summary of EPA Renovation and Remodeling (R&R) Study.** This document provides a brief summary of the Congressionally required studies of lead exposure related to R&R activities that EPA finalized in March 1999.
- **Lead Dust Minimization and Work Practices for Renovation and Remodeling: Draft Technical Manual.** This document describes lead dust minimization work practices appropriate for common residential renovation and remodeling tasks.
- **EPA Fact Sheet: Information for Potential Small Entity Representatives to the Small Business Advocacy Review Panel Process.** This fact sheet summarizes the process under which this panel is being convened.
- **Abatement applications and instructions.** The following forms are included as examples of current forms used for the existing rule that applies to abatement contractors. These forms may be modified slightly and used under at least one scenario of the proposed rule.
  - Application for Firms to Conduct Lead-Based Paint Activities
  - Instructions for Firms Programs Applying for Certification to Conduct Lead-Based Paint Activities
  - Application for Individuals to Conduct Lead-Based Paint Activities
  - Instructions for Individuals Applying for Certification to Conduct Lead-Based Paint Activities
  - Accreditation Application for Firms Training Programs
  - Instructions for Training Programs Applying for Accreditation of Lead-Based Activity Training

If you have any questions on this project, please contact Mike Wilson at the U.S. Environmental Protection Agency at 202-260-4664 or Scott Graves of ICF Consulting at 703-218-2662.

Again, thank you for agreeing to participate on this panel and to provide your input to EPA on the proposed rulemaking. We look forward to hearing from you on the 15th at 1:00 pm EDT.

## **Agenda**

### **EPA TSCA Section 402 Renovation and Remodeling Rulemaking SBREFA Panel**

Conference Call  
Wednesday, September 15, 1999  
1:00 – 3:00 pm EDT

**Toll-free Conference Call Telephone Number: 1-888-214-7649**

#### **Conference Call Objective**

Provide an overview of the SBREFA process, review background materials, and answer process or document related questions.

(Note that the purpose of the conference calls scheduled for September 22 and 23 next week are to provide feedback to EPA on substantive issues related to the proposed rulemaking.)

#### **Agenda Items**

- Welcome and introductions (ICF)
- Purpose and background (EPA)
- Review of documents in mailing package (EPA)
- Questions (Panel)
- Wrap-up and next steps (ICF)

## Background On Forthcoming Renovation and Remodeling Rulemaking

### Health Effects of Lead Exposure

Renovation and remodeling activities conducted in older homes can pose a lead exposure health risk. Both the workers engaged in these activities and the building occupants may be exposed to lead. Lead-based paint is one of the primary sources of lead exposure. It is found in more than half the U.S. housing stock, including three quarters of the units built before 1978.

In some situations, a simple renovation and remodeling task can create dangerous levels of lead-contaminated dust and debris. If small children ingest this lead dust, lead poisoning may result. Children, particularly those under age six, can be exposed to lead dust as a result of crawling on the floor, playing with toys, and engaging in normal hand-to-mouth activity (e.g., eating food or mouthing a toy). Lead poisoning can cause learning disabilities, permanent damage to the nervous system, reductions in intelligence and attention span, and stunted growth and behavior problems. Lead can also harm or injure adults. For example, breathing or ingesting harmful levels of lead dust can cause hypertension and infertility in men and miscarriages in pregnant women. Extreme lead poisoning can result in comas and death.

### Common Renovation and Remodeling Activities

Many common renovation and remodeling projects generate dust, including:

- Surface preparation for projects such as sanding, scraping, and sawing;
- Removing carpeting, cabinets, or other components;
- Refinishing painted floors; and
- Removing paint with a heat gun or open flame torch.

Because lead particles in dust are virtually impossible to see, even work areas or rooms that appear carefully cleaned can have harmful levels of lead-contaminated dust.

Renovation and remodeling activities conducted on building exteriors can release lead-contaminated dust and debris and contaminate surrounding soil and ground cover. If young children play in these areas, their normal hand-to-mouth behavior can result in lead exposures. Exterior work can also release dust that moves indoors by way of contaminated clothing or through open windows or doors.

### Work Practices

Renovation and remodeling contractors can follow work practices to reduce the risk of lead exposure for children as well as adult occupants and workers. These practices are detailed in the accompanying paper entitled *"Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual."* These practices include:

- Minimizing and containing the amount of lead-contaminated dust created;
- Restricting occupant access to work sites when dust is present;
- Cleaning-up the site using methods that effectively reduce this dust.

### Statutory and Regulatory Background

In response to the health hazards arising from lead exposure, Congress passed the Residential Lead-Based Paint Hazard Reduction Act (Title X) in 1992. This law directs EPA to develop regulations under the Toxic Substances Control Act (TSCA) Section 402(a) and create standards for conducting lead-based paint activities that include abatement. EPA has already promulgated final regulations for lead-based paint activities in target housing and child-occupied facilities (40 CFR Part 745). These regulations require that individuals conducting lead-based paint inspections, risk assessments, and abatements be certified and that the work be performed in accordance with specified work practice standards.

EPA's regulations also establish a process for States and Indian tribes to seek authorization to administer lead programs. The Agency will administer lead-based paint training and certification programs and enforce work practices in any State or Indian tribe that does *not* have an authorized program by August 31, 1998 (40 CFR 745.239).

TSCA Section 402(c) directs EPA to address renovation and remodeling activities by first conducting a study (see accompanying "*Summary of EPA Renovation and Remodeling (R&R) Study*") to determine the extent that persons engaged in various types of renovation and remodeling activities create lead-based paint hazards. Section 402(c) further directs the Agency to use the results of the study and consult with stakeholders to determine which renovation and remodeling activities should be regulated under Section 402(a). EPA must then revise the Section 402(a) regulations for abatement activities and apply them, if appropriate, to renovation or remodeling activities.

The Renovation and Remodeling Studies were completed in March 1999. The objective was to identify work activities that may create lead exposure hazards to building occupants and workers. The study demonstrated two principal findings:

- Large amounts of lead dust may be produced by most R&R activities; and
- Residential renovation and remodeling is associated with an increased risk of elevated blood lead in children.

EPA has determined that sufficient data is available to proceed with regulatory development.

The Agency has conducted two stakeholder meetings to discuss the types of contractors and/or tasks that produce lead hazards during renovation and remodeling. These meetings were held in December 1998 and March 1999 and included representatives of labor organizations, contractors, professional remodeling and renovation workers, experts in lead health effects, and others. EPA is developing a draft regulatory framework and plans to publish a proposal in the summer of 2000.

## Options and Approaches for Renovation and Remodeling Regulations

This list paper identifies the eight major components of a regulation addressing renovation and remodeling contractors. These components are based upon the framework established by the existing lead based paint activities regulations codified at 40 CFR 745 subpart L which will be revised to include R&R:

1. applicability
2. firm certification
3. individual training and certification
4. accreditation
5. work practice standards
6. prohibited practices
7. exterior clearance
8. interior clearance

For each regulatory component, the paper identifies several options. These options can be mixed and matched to create rulemaking approaches or scenarios. For example, an approach based upon the Abatement or Full Regulatory Approach is reflected by the option 1 selection for each component. The Limited Regulatory Approach is created by selecting each option that is presented in **bold faced type**. The estimated costs of the Abatement or Full Regulatory Approach and the Limited Regulatory Approach are identified in the paper entitled *"Estimated Costs of Renovation and Remodeling Rule Approaches."*

### Applicability

A renovation and remodeling rule would apply to individuals and firms engaged in renovation and remodeling activities in all or certain housing built before 1978, the year lead-based paint was banned. Possible options include:

- Option 1: All pre-1978 housing**  
 Option 2: All pre-1978, rental housing only  
 Option 3: All pre-1950 housing  
 Option 4: All pre-1950, rental housing only

Under all of these options, the regulated parties would include residential rental property owners and managers, general contractors, and special trade contractors such as painters, plumbers, carpenters, and electricians. In addition, a variety of activities could be exempt from the rules, such as jobs disturbing a small area of lead-based paint, work on housing that is determined to be free of lead-based paint, work performed by the homeowner, or work on housing for the elderly or disabled, unless a child resides there, or on zero bedrooms dwellings. These exemptions are described in greater detail in *"Questions and Answers for Renovation and Remodeling Options."*

### Certification of Firms

In order to conduct regulated renovation and remodeling activities, EPA could require a firm to be certified by EPA or an authorized state. More information regarding firm certification can be found in “*Questions and Answers for Renovation and Remodeling Options*”. These certification requirements could apply to:

- Option 1:** All renovation and remodeling firms
- Option 2: Only firms involved in large-scale surface preparation or demolition
- Option 3: No firms

## Training and Certification of Individuals

EPA could require individuals engaged in regulated renovation and remodeling activities to complete an accredited training course and be certified by EPA or an authorized state. More information regarding individual certification can be found in “*Questions and Answers for Renovation and Remodeling Options*”. Possible options include:

- Option 1: Training and certification of all individuals performing regulated renovation and remodeling activities
- Option 2: Training and certification of supervisors only; worker training would be optional
- Option 3: Training required for all individuals performing regulated renovation and remodeling activities; no certification for workers**
- Option 4: No training and certification requirements

## Accreditation of Training Providers

EPA could require entities that train renovation and remodeling workers to obtain accreditation from EPA or an authorized state. More information regarding training provider accreditation can be found in “*Questions and Answers for Renovation and Remodeling Options*”. The basic options are:

- Option 1: Require all training providers to be accredited**
- Option 2: Do not require training provider accreditation; instead, using the OSHA training approach, require firms to document the training of their employees in key areas specified by the Agency

## Work Practice Standards

The current regulations for lead-based paint activities contain prescriptive work practice standards that take into account reliability, effectiveness, and safety. EPA could establish prescriptive work practice standards for renovation and remodeling activities. Alternatively, EPA could establish performance-based standards, allowing renovation and remodeling contractors the flexibility to determine how to meet the performance standards. More information regarding work practice standards can be found in “*Questions and Answers for Renovation and*

*Remodeling Options*” The main options are:

- Option 1: Prescriptive containment and cleanup requirements
- Option 2: Performance-based containment and cleanup requirements (example, interior and exterior fugitive dust restrictions)**
- Option 3: None

## Prohibited Practices

Under the current regulations for lead-based paint abatement activities, certain practices are prohibited because of the risks they create. These practices are open flame burning or torching of lead-based paint; machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint *except* when done with HEPA exhaust control; dry scraping of lead based paint *except* around electrical outlets or for any area no more than 2 square feet in any one room, hallway, or stairwell, or for any area no more than 20 square feet on exterior surfaces; and operating a heat gun at 1100 degrees Fahrenheit or higher. For the renovation and remodeling rule, EPA could:

- Option 1: Continue with lead abatement work practice prohibitions described above
- Option 2: Modify the abatement work practices prohibitions to:
  - a) Allow exterior open flame burning or torching of lead-based paint and
  - b) Eliminate restrictions on the use of dry scraping
- Option 3: Modify abatement work practice prohibitions as in option 2 and also allow interior flame burning with some restrictions – see interior clearance, option 2**
- Option 4: Have no restricted practices

## Exterior Clearance

EPA could require an exterior clearance following exterior renovation and remodeling. This clearance could include a visual inspection for deteriorated lead-based paint, visual inspection to determine if visible amounts of dust and debris remain, and soil testing for lead contamination. More information regarding exterior clearance requirements can be found in “*Questions and Answers for Renovation and Remodeling Options*” The options include:

- Option 1: Visual clearance following all exterior renovation and remodeling**
- Option 2: Soil sampling following all exterior renovation and remodeling
- Option 3: No clearance following exterior renovation and remodeling

## Interior Clearance

EPA also could require an interior clearance following interior renovation and remodeling. Interior clearance would include a visual inspection of the work area to verify if deteriorated painted surfaces or visible amounts of dust, debris, or residue remain after renovation and remodeling activity, and clearance sampling for lead-contaminated dust. More

information regarding interior clearance requirements can be found in "*Questions and Answers for Renovation and Remodeling Options*". The options include:

- Option 1: Dust testing following all interior renovation and remodeling
- Option 2: Dust testing following specific jobs involving large-scale surface preparation or demolition and any practice prohibited by the abatement rules – see prohibited practices, Scenario 1, plus visual clearance for all other interior jobs**
- Option 3: Visual clearance following all interior renovation and remodeling
- Option 4: No clearance following interior renovation and remodeling

## Questions and Answers for Renovation and Remodeling Options

### Who Would Be Required to Comply With This Rule?

All firms and individuals engaged in renovation activities or carpet removal in all or certain housing and child-occupied facilities built before 1978. (As defined below, renovation includes both renovation and remodeling activities.) Possible exceptions include:

- Minor repair or maintenance, such as a small electrical or plumbing job, that disturbs two square feet or less of painted surfaces;
- Renovation of housing or components that a certified inspector or risk assessor has determined to be free of lead-based paint;
- Work performed by the owner of the home, unless persons other than the owner's immediate family reside there;
- Housing for elderly or disabled persons, unless children reside there; and
- Zero-bedroom dwellings such as studio apartments or dormitories.

### How Would a Firm Obtain and Maintain Certification?

- Submit an application and application fee to EPA or an authorized state;
- Attest, as part of the application, that the firm will:
  - Employ appropriately certified employees to conduct renovation and remodeling activities, and
  - Follow applicable work practice standards; and

#### Definitions

*Renovation* means the modification of all or part of any existing structure that disturbs a painted surface. It includes:

- Removing or modifying a painted surface, component, or structure;
- Preparing a surface by sanding, scraping, or other activity that may create paint dust;
- Replacing a window; and
- Performing another activity that disturbs a painted surface.

A *child-occupied facility* is all or part of a building visited regularly by the same child, six years of age or under, for at least three hours per day on at least two different days during the week. Examples include day-care centers, preschools, and kindergarten classrooms.

- Pay a fee every three years to maintain certification.

### **How Would an Individual Obtain and Maintain Certification?**

An individual could be certified as a renovation supervisor, renovation worker or as a dust clearance technician. To obtain and maintain this certification, the individual must:

- Complete the required training course from an accredited training provider;
- Submit an application for certification to EPA or an authorized state;
- Comply with the applicable work practice standards; and
- Obtain re-certification every three years by:
  - Completing the applicable accredited refresher training course from an accredited training provider, and
  - Submitting an application for re-certification and a re-certification fee to EPA or an authorized state.

### **How Would a Training Program Obtain and Maintain Accreditation?**

**(Note: All course hours listed are estimates)**

EPA or an authorized state would accredit a training provider. The provider would need to be accredited for each course it offered. The training program must conduct a course test at the completion of each course and a hands-on skills assessment.

The training program must employ a training manager who has:

- One of the following three qualifications:
  - Two years of experience, education, or training in teaching workers or adults,
  - A bachelor's or graduate degree in a relevant field of study, or
  - Two years of experience in managing a training program specializing in environmental hazards; and
- Demonstrated experience, education, or training in the relevant industry.

The training manager would develop and implement a quality control plan that contains:

- Procedures for periodic revision of training materials and the course test to reflect innovations in the field; and

- Procedures for the training manager's annual review of principal instructor competency.

The training manager would designate a qualified principal instructor for each course. The principal instructor must have:

- Demonstrated experience, education, or training in teaching workers or adults; or
- Demonstrated experience, education, or training in lead or asbestos abatement, painting, carpentry, renovation, remodeling, occupational safety and health, or industrial hygiene.

The principal instructor would be responsible for organizing and teaching of all course material.

The renovation supervisor course must last a minimum of 24 hours, with a minimum of six hours devoted to hands-on training activities. The course would address:

- Role and responsibility of a renovation supervisor;
- Background information on lead and its adverse health effects;
- Applicable Federal, state, and local regulations and guidance;
- Liability and insurance issues relating to renovation;
- Inspection report interpretation;
- Renovation methods for lead-based paint, including prohibited practices;
- Clearance standards and testing;
- Cleanup and waste disposal; and
- Recordkeeping.

The renovation worker course must last a minimum of eight hours, with a minimum of two hours devoted to hands-on training activities. The course would address:

- Role and responsibility of a renovation worker;
- Background information on lead and its adverse health effects;
- Applicable Federal, state, and local regulations and guidance;
- Renovation methods for lead-based paint, including prohibited practices; and
- Interior and exterior containment and cleanup methods.

The dust sampling technician course would last a minimum of four hours, with a minimum of one hour devoted to hands-on training activities. The course would address:

- Role and responsibility of a dust clearance technician;
- Background information on lead and its adverse health effects;
- Applicable Federal, state, and local regulations and guidance;
- Dust sampling methodologies; and
- Clearance standards and testing.

The renovation supervisor refresher course would last a minimum of 8 hours. The renovation worker refresher course would last a minimum of four hours. The dust clearance technician refresher course would last a minimum of two hours. These courses would address current safety practices, laws and regulations, and technologies relating to lead-based paint and to renovation or dust clearance testing.

The application for accreditation would require:

- A description of the facilities and equipment to be used;
- A copy of the course test blueprint, including course objectives;
- A description of the activities and procedures for conducting an assessment of hands-on skills; and
- A copy of the quality control plan.

If the training program does not use the EPA model training materials, the application also must include a copy of the student and instructor manuals, other materials to be used, and the course agenda.

### **What are Prescriptive Work Practices?**

Prescriptive work practices would require that all renovation activities be conducted in accordance with one of the following methodologies:

- EPA Lead Dust Minimization Work Practices for R&R Technical Manual;
- The U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing;
- EPA Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead-

Contaminated Soil;

- EPA Residential Sampling for Lead: Protocols for Dust and Soil Sampling (EPA report number 7474-R-95-001);
- Regulations, guidance, methods or protocols issued by states and Indian Tribes that have been authorized by EPA; and
- Other equivalent methods and guidelines.

### **What Practices are Prohibited for Lead-Based Paint Abatement Activities?**

- Open flame burning or torching;
- Operating a heat gun at temperatures greater than 1,100 degrees Fahrenheit
- Machine sanding, grinding, abrasive blasting, or sandblasting *without* HEPA filtered exhaust control;
- Dry scraping of lead-based paint *except*:
  - In conjunction with heat guns or around electrical outlets;
  - Any area less than or equal to 2 square feet in any one room, hallway or stairwell, and
  - Any area less than or equal to 20 square feet on exterior surfaces.

### **What Would be Required for Exterior Clearance?**

A certified inspector, risk assessor, or dust clearance technician would be required to perform a visual inspection for deteriorated painted surfaces and/or visible amounts of dust, debris, or residue at the conclusion of each renovation or remodeling job. All horizontal surfaces in the outdoor living area closest to the abated surface must be cleaned of visible dust and debris. If paint chips are present below any exterior surface affected by the renovation, they must be removed from the site and properly disposed of according to all applicable Federal, state and local requirements.

Exterior (and interior) clearance reports must be prepared and maintained for three years by the certified firm or individual. The certified firm or individual must provide copies of these reports to the building owner who contracted for its services.

### **What Would be Required for Interior Clearance?**

A certified inspector, risk assessor, or dust clearance technician must perform clearance

sampling for lead-contaminated dust. Clearance levels appropriate for the purposes of this section would be found in the EPA Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead Contaminated Soil or other equivalent guidelines. (This guidance will eventually be replaced by regulations currently being developed by EPA under TSCA § 403.)

Dust samples must be taken *at least 1 hour* after completion of final post-renovation cleanup activities. Dust samples will be taken from up to four rooms, hallways, or stairwells within the work area.

The certified inspector, risk assessor, or dust clearance technician must compare the residual lead level, as determined by the laboratory analysis, from each dust sample with applicable clearance levels for lead in dust on floors and windows. If the residual lead levels in a dust sample exceed the clearance levels, all the components represented by the failed sample must be re-cleaned and retested until clearance levels are met.

In owner-occupied housing, an exemption may allow the owner to waive any dust clearance sampling requirements in writing. The contractor will be required to keep records of the waiver.

## Estimated Costs of Renovation and Remodeling Rule Approaches

The following tables present EPA estimates of the costs of possible scenarios for the renovation and remodeling rule. Table 1 contains two different scenarios, Scenario 1, known as the Abatement or Full Regulatory Scenario, and Scenario 2, referred to as the Limited Regulatory Scenario.

Table 1 lists, for each scenario, the estimated average regulatory compliance cost, the estimated average regulatory compliance cost per R&R event, and the primary requirements under each scenario. For this comparison an R&R "event" is a combination of tasks that occur in the same room at the same general time. The average cost of an R&R event is approximately \$2,500.

**Table 1**

### Estimated Costs of Abatement (or Full Regulatory) Approach and Limited Regulatory Approach

	<b>Scenario 1: Abatement or Full Regulatory Scenario</b>	<b>Scenario 2: Limited Regulatory Scenario</b>
<b>Total Regulatory Compliance Cost</b>	<b>\$2,001,000,000/yr.</b>	<b>\$1,244,000,000/yr.</b>
<b>Regulatory Compliance Cost per Event</b>	<b>\$123.<sup>00</sup></b>	<b>\$77.<sup>00</sup></b>
<b>Category</b>	<b>Scenario 1 Requirements</b>	<b>Scenario 2 Requirements</b>
Applicability	All pre-1978 housing	All pre-1978 housing
Firm Certification	Yes	Yes
Individual Training/Certification	Training and certification for all workers	Training for all workers; no certification
Accreditation	Yes	Yes
Work Practices	Prescriptive	Performance
Prohibited Practices	Abatement	Abatement restrictions, dry scrape & flame OK w/clearance
Exterior Clearance	Visual	Visual

EPA has estimated that a rule that applies to all pre-1978 housing would affect 8.9 million interior and 7.3 million exterior R&R events for a total of 16.2 million events per year. These estimates are based on U.S. Census and 1997 American Housing Survey data, with do-it-yourself, non-lead-based paint, and other events excluded as appropriate. EPA also estimates that there are approximately 1.5 million R&R workers, supervisors, and technicians involved in R&R work, 230,000 R&R firms, and 400 potential training providers.

Table 2 shows how the estimated regulatory compliance cost of Scenario 2 would change with changes in specific requirements. The first row for each component presents the option for Scenario 2. For example, for the Individual Training and Certification component, Scenario 2 requires training for all workers but no certification. If this scenario were modified to require both training and certification for all workers, the estimated total regulatory compliance cost would increase by \$36,000,000 a year or \$2 per event. As another example, Scenario 2 requires that all firms be certified. If certification were required only for firms involved in large-scale jobs, the estimated regulatory compliance cost reduction would be minimal. If, however, certification was not required for any firm, then the estimated total regulatory compliance cost would decline by approximately \$17,000,000 a year or \$1 per event. Note that in the table decreases in estimated costs are indicated by parentheses around the number (e.g., (\$17,000,000/yr.)).

**Table 2**  
**Changes in Regulatory Compliance Estimated Cost by Varying Scenario 2**

Component	Requirements	Total Regulatory Compliance Cost	Regulatory Compliance Cost Per-Event
Applicability	All pre-1978 housing	* Scenario 2 *	* Scenario 2 *
Firm Certification	Yes Yes, large scale jobs only No	* Scenario 2 * Minimal cost reduction (\$17,000,000/yr.)	* Scenario 2 * Minimal cost reduction (\$1)
Individual Training and Certification.	Training for all workers, no certification Both training and certification for all workers Train and certify supervisors only No training or certification	* Scenario 2 * \$36,000,000/yr. (\$70,000,000/yr.) (\$96,000,000/yr.)	* Scenario 2 * \$2 (\$4) (\$6)
Accreditation	Yes No	* Scenario 2 * (\$210,000/yr.)	* Scenario 2 * (\$0)
Work Practices	Performance Prescriptive None	* Scenario 2 * \$387,000,000/yr. No change if clearance required	* Scenario 2 * \$24 No change if clearance required
Prohibited Practices	Abatement restrictions, dry scrape and flame OK with clearance Abatement restrictions Abatement restrictions, dry scrape and flame OK No restricted practices	* Scenario 2 * Unknown Unknown Unknown	* Scenario 2 * Unknown Unknown Unknown
Exterior Clearance	Visual Soil sampling None	* Scenario 2 * \$412,000,000/yr. (\$27,000,000/yr.)	* Scenario 2 * \$56 (\$4)
Interior Clearance	Dust testing after major events Dust testing after all events Visual after all events Visual after major events None	* Scenario 2 * \$317,000,000/yr. (\$185,000,000/yr.) (\$204,000,000/yr.) (\$217,000,000/yr.)	* Scenario 2 * \$36 (\$21) (\$23) (\$24)

## Summary of EPA Renovation and Remodeling (R&R) Study

### Study Objectives

To identify R&R work activities which may create a lead exposure hazard to (1) R&R professionals performing the work or (2) Building occupants (especially young children) who live or visit the buildings where work being done.

### Populations of Interests

There were two populations of interest: (1) R&R professionals, (2) Building occupants (especially young children).

### R&R Study

There were four phases to the R&R study. The study approach and conclusions for each phase are described below.

#### Phase I - Environmental Field Sampling Study (EFSS)

##### Approach

- Series of Case Studies
- Focus on R&R “*target*” work activities:
  - Carpet removal,
  - Window replacement,
  - HVAC removal/modification/replacement,
  - Demolition/removal of architectural component, and
  - Generic carpentry.

Two types of samples were collected for each work activity:

- (1) Worker air-monitoring samples - indicating degree of worker inhalation exposure.
- (2) Settled-dust samples - indicating potential for exposure to building occupants.

##### Phase I Conclusions

Personal air-monitoring samples show that some R&R work activities can result in worker exposure above the OSHA PEL (8-hr TWA). Settled dust samples show that large amounts of lead (often 1000's ug/ft<sup>2</sup>) can be produced or released by most of the R&R work activities. Routine broom or shop-vacuum clean up after work did not adequately clean the work sites (to levels below 100 ug/ft<sup>2</sup>).

#### Phase II - Worker Characterization and Blood-Lead (WCBS)

### Approach

- Blood samples and questionnaire data were collected from 585 R&R workers from Philadelphia and St. Louis.
- The questionnaire focused on demographic and background information such as work history, work habits, hobbies, etc.

### Phase II Conclusions

There is little evidence from blood samples that R&R professionals are, in general, exposing themselves to lead levels of serious concern. Separate examination of workers by job category (floor layers, carpenters, window replacement specialists, laborers, drywall installers, painters, supervisors) disclosed that there were statistically significant differences between some categories of workers. For none of these categories, however, did lead exposure appear to be an especially serious problem. In addition, the questionnaire data from this study indicate that few R&R professionals use respirators while working.

## Phase III - Retrospective Study of Wisconsin Children

### Approach

- The Wisconsin Childhood Blood-lead Study focused on the relationship between R&R activities and children's blood-lead levels. The EPA, the University of Wisconsin in Madison and the Wisconsin Department of Health jointly conducted this large scale retrospective study using Wisconsin's State Blood-lead Registry.
- Extensive telephone interviews were conducted with 3654 parents/guardians of Wisconsin children who had already had their blood-lead tested. The telephone interviews consisted of questions about what R&R work, if any, had been conducted within each residence in the last year.

### Phase III Conclusions

Analysis of the data revealed that residential R&R, in general, is associated with an increased risk of elevated blood-lead in children. That is, children residing in homes where R&R activities were conducted are more likely to have elevated blood-levels than children from homes where no R&R was performed. The study also demonstrated that some specific R&R activities are associated with increased risk of EBL. In particular, removing paint using a heat gun, open flame torch, chemical removers, or wet scraping/sanding, and preparing surfaces for painting by sanding or scraping, significantly increased the risk of a child having EBL.

## Phase IV - Work Characterization and Blood-Lead for Highly Exposed Workers

### Approach

- The R&R Phase IV study was an extension of Phase II. Where Phase II examined lead exposure among a general population of R&R professionals, Phase IV focused on individuals who worked primarily in old historic buildings.
- Phase IV explored lead exposure in 161 professional R&R workers and 82 homeowners who worked extensively in old houses.
- Each study participant provided a blood sample for analysis and completed a detailed questionnaire identical to the one used in Phase II.

#### **Phase IV Conclusions**

The results of this Phase demonstrate that individuals who regularly work in high lead exposure potential settings (i.e. old houses) do have a higher probability of an elevated blood-lead level than the general population of R&R professionals measured in Phase II. The geometric mean blood-lead level for R&R professionals was significantly greater than for homeowners. Preparation for painting and/or sanding of painted surfaces were the activities most consistently associated with elevated blood-lead levels among study participants.

#### **General Conclusions**

- Many R&R work activities can produce or release large quantities of lead. These activities include, but are not limited to:
  - Sanding,
  - Cutting,
  - Window replacement, and
  - Demolition.
- Lead exposure to R&R workers appears to be less of a problem than to building occupants (especially young children). Some workers (and homeowners) are exposed to high levels of lead.
- Any work activity that produces dust and debris may create a lead exposure problem. This can include the use of an open flame torch and heat gun for paint removal.

#### **EPA Contacts:**

Dan Reinhart - 202-260-1585 or Darlene Watford - 202-260-3989.

United States  
Environmental Protection  
Agency

Office of Policy  
(2136)

EPA 233-F-99-002  
July 1999

---



# FACT SHEET

## Information for Potential Small Entity\* Representatives to the Small Business Advocacy Review Panel Process

\* For the purposes of the Small Business Advocacy Review Panel process, **small entity includes small businesses, small governments and small non-profit enterprises.** The term "small business" is defined by law in the Small Business Act and the terms "small government and small non-profit" are defined by law in the Regulatory Flexibility Act (more detail inside).

---

## What is an EPA small entity representative?

An EPA Small Entity Representative (SER) is an individual chosen by the Agency as a participant representative of small entities likely to be directly regulated by a particular proposed rule under development. The Regulatory Flexibility Act defines small entities as small businesses, small governments, and small non-profit enterprises (more detail below).

If you are selected as a Small Entity Representative, we will ask you to provide comments on behalf of your company or organization to a specific Small Business Advocacy Review Panel considering a particular rule. Your participation in the rulemaking process will ensure that EPA hears small entities' concerns.

---

## Why does EPA need small entity representatives?

EPA has an ongoing commitment to minimize the burden of our regulations on small entities to the extent feasible while still meeting our statutory requirements. The Small Business Regulatory Enforcement Fairness Act (SBREFA), passed in March 1996, amended the Regulatory Flexibility Act (RFA) to further the Agency's partnerships with small entities in our rulemakings. One of the important goals of the RFA, as amended by SBREFA, is to provide small entities with an expanded opportunity to participate in the development of certain regulations.

In particular, EPA must convene a Small Business Advocacy Review Panel for certain rules under development, unless the Agency determines that the rule will not impose a significant economic impact on a substantial number of small entities. Each Panel includes representatives from the Small Business Administration, the Office of Management and Budget, and EPA. The Panel conducts outreach to **individuals representative of small entities** likely to be subject to the rule and prepares a report on each rulemaking to the Administrator of EPA on the potential small entity impacts of the rule and on potential ways to reduce those impacts. The goal of the Small Business Advocacy Review Panel process is to explore ways of minimizing significant burdens on regulated small entities while achieving the public purpose to be served by regulation.

---

## Who is eligible to be a small entity representative?

You are eligible to be a small entity representative if you meet the definition of small (either as a business, government or non-profit organization) as defined by law and are directly subject to the particular regulation under development. The RFA/SBREFA references the definition of "small business" found in the Small Business Act, which authorizes the Small Business Administration (SBA) to further define "small business" by regulation. The SBA's small business definitions are codified at 13 CFR 121.201. The RFA/SBREFA defines "small governmental jurisdiction" as the government of a city, county, town, school district or special district with a population of less than 50,000. Further, "small organization" is defined as any "not-for-profit enterprise which

is independently owned and operated and is not dominant in its field."

We prefer that small entity representatives be owner-operators of small businesses, officials from small governmental jurisdictions or managers of non-profit enterprises potentially subject to the rule. If such representatives are unavailable, other individuals, such as persons from trade associations that exclusively or primarily represent potentially regulated small entities may serve as small entity representatives. Other persons who wish to act as small entity representatives will be evaluated on a case by case basis.

---

## Who chooses small entity representatives?

For each rule that may have a significant economic impact on a substantial number of small entities, the EPA program office responsible for the rule identifies what types of small entities are likely to be directly regulated and works in partnership with other Agency offices in developing a list of potential small entity representatives. Through the Agency's Small Business Advocacy Chair, the program office also consults with the SBA Chief Counsel for Advocacy to identify individuals to serve as small entity representatives. Based on these recommendations, official small entity representatives are appointed by the Small Business Advocacy Chair.

---

## At what stage in the rulemaking does the Panel process occur?

Prior to proposing a rule we engage you, our stakeholders, in a dialog to inform you of our plans and to learn about your ideas and concerns regarding a rule under development. If our preliminary assessment of the potential impacts of the rule indicates that we may not be able to certify that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities, EPA will initiate the Small Business Advocacy Review Panel process. This process is intended to provide a special opportunity for small entities to participate in the rulemaking under the provisions of RFA/SBREFA.

---

## What will being a small entity representative entail?

Generally, prior to the convening of a Panel and during the Panel's 60 day term, as a small entity representative to the federal Panel, you will be asked to review background information, listen to informational briefings and provide oral and written comments to the Agency and the Panel.

Typically, prior to the convening of a Panel, which consists of only federal employees as specified by law, the EPA program office responsible for the development of the rule will provide you with some background information on the rule and ask for your feedback. The program office, in coordination with EPA's Small Business Advocacy Chair, may also arrange a meeting with small entities potentially subject to a particular rule to hear your (individual) initial concerns and suggestions. Representatives of OMB and SBA are also invited to this meeting.

After the Panel is convened, the Panel will provide you with some additional information and some specific questions, followed by a teleconference or a

face-to-face meeting to give you the opportunity to communicate directly with the Panel members and provide oral comments. The Panel also generally requests small entity comments in writing. The goal of this consultation is to provide a forum for small entities to raise issues of concern and to provide the Panel with insight into technical issues and potential ways of approaching them.

---

## What will be done with my small entity input?

Each Small Business Advocacy Review Panel considers all small entity comments in addition to other rule-related material prepared by the program office and, within the 60 days provided by statute, prepares a report on the rulemaking to the Administrator of EPA on the potential small entity impacts of the rule and on potential ways to reduce those impacts. The Panel report will be considered by the Agency as it decides the content of the proposed rule. All written small entity comments are appended to the Panel report. Of course, after publication of the proposed rule in the Federal Register, you will have an additional opportunity to submit comments during the standard public comment period.

---

## Where can I get more information?

Several EPA documents are available that can provide more information on the Regulatory Flexibility Act, the Agency's small entity compliance assistance efforts and the elements of a regulatory flexibility analysis. These documents and further assistance with any RFA/SBREFA questions are available from the staff of the Small Business Advocacy Chair.

### **EPA Small Business Advocacy Chair**

Tom Kelly, Director  
Office of Regulatory Management and Information  
Tel: (202) 260-4001

### **Small Business Advocacy Chair Staff**

Stuart Miles-McLean, (202) 260-8518, miles-mclean.stuart@epa.gov  
Jennifer Greenamoyer, (202) 260-7829, greenamoyer.jennifer@epa.gov  
Jennifer Kim, (202) 260-1045, kim.jennifer@epa.gov  
Patrick Easter, (202) 260-6843, easter.patrick@epa.gov

# **Lead Dust Minimization Work Practices for Renovation and Remodeling**

## **Draft Technical Manual**

**US Environmental Protection Agency  
Office of Pollution Prevention and Toxics**

April 20, 1999

### NOTICE

This manual describes lead dust minimization work practices appropriate for common residential renovation and remodeling tasks. It is an internal EPA draft technical reference tool and is not intended for use by the general public. As such, the manual should not be cited or circulated.

Mention of any trade name products in this manual does not convey and should not be interpreted as conveying official EPA approval, endorsement or recommendation.

## TABLE OF CONTENTS

	Page
I. INTRODUCTION AND OVERVIEW .....	1
Background .....	1
Purpose and Guiding Assumptions .....	2
Relationship to Existing EPA Regulations .....	2
Organization of the Document .....	3
II. PRINCIPLES FOR LEAD DUST MINIMIZATION WORK PRACTICES DURING RENOVATION AND REMODELING .....	4
III. INTERIOR RENOVATION AND REMODELING: BASIC CONSTRUCTION TASKS .....	6
Level 1: Minimal Lead Dust-Generating Tasks .....	8
Level 2: Moderate Lead Dust-Generating Tasks .....	9
Level 3: Substantial Lead Dust-Generating Tasks .....	10
IV. EXTERIOR RENOVATION AND REMODELING: BASIC CONSTRUCTION TASKS .....	15
Level 1: Minimal Lead Dust-Generating Tasks .....	17
Level 2: Moderate Lead Dust-Generating Tasks .....	18
Level 3: Substantial Lead Dust-Generating Tasks .....	19
REFERENCES .....	24
GLOSSARY .....	27

## LIST OF EXHIBITS

	Page
Exhibit 1: Lead Dust Minimization Work Practices For Interior Renovation Tasks . . . . .	7
Exhibit 2: Tools, Supplies And Equipment For Interior Renovation Tasks . . . . .	12
Exhibit 3: Interior Set-Up Procedures . . . . .	13
Exhibit 4: Interior Final Clean-Up And Waste Disposal Procedures . . . . .	14
Exhibit 5: Lead-Dust Minimization Work Practices For Exterior Renovation Tasks . . . . .	16
Exhibit 6: Tools, Supplies And Equipment For Exterior Renovation Tasks . . . . .	20
Exhibit 7: Exterior Set-Up Procedures . . . . .	21
Exhibit 8: Exterior Final Clean-Up And Waste Disposal Procedures . . . . .	22

## I. INTRODUCTION AND OVERVIEW

### Background

Renovation and remodeling activities conducted in older homes pose a considerable lead exposure health risk. Both the workers engaged in these activities as well as the occupants of the building undergoing the work may be exposed to lead. Lead-based paint has been shown to be one source of lead exposure. It is found in more than half the US housing stock, including three quarters of the units built before 1978. In addition to paint, the fine dust that has accumulated behind the woodwork, walls, and trim may also contain lead that can be released during these activities.

Even a simple renovation and remodeling task can create lead-contaminated dust and debris that pose health risks to children and adults living in the building and to project workers. If small children ingest this lead dust, lead poisoning may result. Children, particularly those under age six, are exposed to lead dust as a result of crawling on the floor or playing with toys and then engaging in normal hand-to-mouth activity (e.g., eating food or mouthing a toy). Lead poisoning can cause learning disabilities, permanent damage to the nervous system, reductions in intelligence and attention span, stunted growth and behavior problems. Lead can also have health consequences for adults. For example, breathing or ingesting harmful levels of lead dust can cause hypertension and infertility in men and miscarriages in pregnant women. Extreme lead poisoning can result in comas and death.<sup>1</sup>

Although specific sources and mechanisms of lead exposure from renovation and remodeling are not entirely understood, there is little doubt that dust control is the key to reducing this exposure. A wide variety of simple tasks can create lead-contaminated dust and debris that may pose a serious health risk to building occupants and project workers. Minimizing the dust produced and released by this work will almost certainly reduce the lead exposure potential.

Many common residential renovation and remodeling projects jobs can generate dust. For example, a painting job that requires extensive surface preparation before repainting can involve sanding (either by hand or with a power tool), scraping or removing damaged wood trim. Renovation related tasks such as removing cabinets, sawing, refinishing painted floors, or removing paint with a heat gun or open flame torch can also release substantial lead dust or fumes if undertaken in a residence with lead-based paint.<sup>2</sup> Because lead particles in dust are virtually impossible to see, even a work area or room that appears as though it was carefully cleaned can have harmful levels of lead-contaminated dust.

Renovation and remodeling jobs conducted on building exteriors can release lead-contaminated dust and debris, contaminating the soil and ground cover. If young children play in these areas, their normal hand-to-mouth behavior can result in lead exposures. Exterior work can also release dust that moves indoors through open windows or doors or by being tracked inside on shoes and clothing.

---

<sup>1</sup> NIOSH, January 1997, "Protecting Workers Exposed to Lead-Based Paint Hazards," p. 1-5.

<sup>2</sup> U.S. Environmental Protection Agency (EPA), May 1997, "Lead Exposure Associated with Renovation and Remodeling Activities: Summary Report," pp. 19-23.

Renovation and remodeling contractors can, however, take precautions to minimize and contain the amount of lead-contaminated dust created, restrict occupant access to work sites when dust is present, and clean-up the site using methods that effectively reduce this dust. These precautions can reduce the risk of lead poisoning among children and adult occupants as well as for those performing the work.

## Purpose and Guiding Assumptions

This document presents a set of draft technical specifications for renovation and remodeling activities that describe recommended precautions to ensure that lead-contaminated dust and debris are minimized, controlled and properly cleaned-up. The specifications were developed to be applicable to both contractors and homeowners who perform these activities without the aid of a contractor. However, the document in its current form is not intended for use by the general public or contractors. Rather, it was developed to provide background information that will serve as a reference for EPA to prepare technical materials, including training materials.

To help focus these specifications, residential properties are assumed to be reasonably well maintained. Properties with extensive deferred maintenance, or abandoned properties with severe structural problems, were not considered in formulating the specifications. Such properties often have severely deteriorated paint on many surfaces and even small-scale tasks such as nailing can create substantial lead-contaminated dust and debris. A good rule of thumb when working on deferred maintenance properties would be to always use the most extensive level of lead dust minimization work practice precautions.

## Relationship to Existing EPA Regulations

The Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X) directs EPA to develop regulations under the Toxic Substances Control Act (TSCA) Section 402(a) which create standards for conducting lead-based paint activities that include abatement. EPA has already promulgated final regulations for lead-based paint activities in target housing and child-occupied facilities (40 CFR Part 745). These regulations require that individuals conducting lead-based paint inspections, risk assessments and abatement be properly trained and certified and that the work be performed in accordance with the standards set forth in the rule. The work practice standards for abatement include:

- providing notice of the commencement of work;
- developing an occupant protection plan;
- restricting selected work practices due to the potential risk of excessive lead contamination;
- procedures for soil abatement; and
- dust and soil clearance testing requirements.

EPA's regulations also establish a process for States and Indian tribes to seek authorization to administer lead programs. The Agency will administer lead-based paint training and certification programs and enforce work practices in any State or Indian tribe that does not have an authorized program by August 31, 1998 (40 CFR 745.239).

TSCA Section 402(c) directs EPA to address renovation and remodeling activities by first conducting a study to determine the extent to which persons engaged in various types of renovation and remodeling activities in target housing are exposed to lead in the conduct of such activities or disturb lead and create a lead-based paint hazard. Section 402(c) further directs the Agency to use the results of the study and consult with stakeholders to determine which renovation and remodeling activities should be subject to regulations under Section 402(a). EPA must then revise the Section 402(a) regulations for abatement activities and apply them, if appropriate, to renovation or remodeling activities.

Under Section 403 of TSCA, EPA has proposed a rule to identify conditions that constitute a lead-based paint hazard and lead levels in residential dust and soil that should be considered a health hazard to building occupants. Although the Agency has not yet promulgated its final standards, it has published interim guidance. These draft technical specifications call for lead dust clearance testing and soil testing under several circumstances. The forthcoming TSCA 403 standards will establish relevant dust clearance levels that could be used during renovation and remodeling projects.

## Organization of the Document

This document presents specifications for lead dust minimization work practices during renovation and remodeling from a *task* perspective. *Tasks* are specific construction activities such as drilling, sanding, using a crow bar to remove a component, and demolishing walls using power or hand tools. Many such tasks typically make up a project like removing kitchen cabinets or repainting a wall.

The document is organized into four chapters:

- Chapter I (this chapter) provides the rationale for developing these draft specifications and highlights each of the remaining chapters;
- Chapter II outlines the key principles that guided the development of the draft specifications presented in Chapters III and IV;
- Chapter III addresses lead dust minimization work practices for interior renovation and remodeling tasks; and
- Chapter IV addresses the work practices for exterior renovation and remodeling tasks.

In Chapters III and IV, renovation and remodeling tasks are grouped into three potential lead dust-generating task levels, ranging from minimal to substantial. At each level, the specifications identify typical tasks and specify lead dust minimization work practices. A glossary is included at the end of the manual to help define commonly used terms.

## II. PRINCIPLES FOR LEAD DUST MINIMIZATION WORK PRACTICES DURING RENOVATION AND REMODELING

This chapter sets forth the principles for lead dust minimization work practices found in Chapters III and IV.

Five principles guided the development of these technical specifications. These principles are presented below to explicitly identify the assumptions used in formulating the specifications.

### 1. In residences built before 1978, contractors should assume that all paint contains lead unless analytic tests reveal otherwise.

When working in or on a residential property built prior to 1978, assume that all painted surfaces and building components are coated with lead-based paint unless analytic tests (e.g., use of portable XRF lead-in-paint analyzers or laboratory analysis of paint chip samples) demonstrate that the paint is not lead-based. In post-1949 housing where lead-based paint may be less prevalent, paint testing is encouraged so as to avoid the necessity of following lead dust minimization work practices when lead-based paint is not present.

### 2. Contractors must minimize, contain and clean-up any dust and debris created.

If renovation, remodeling or repainting activities will disturb painted surfaces or create dust:

- choose construction tasks that generate a lower amount of dust and debris;
- contain any dust and debris within the smallest possible area;
- do not permit non-workers to enter the work area;
- wear protective clothing while working and use a HEPA (High Efficiency Particulate Air) filter-equipped vacuum to clean the clothing and work shoes or discard the protective clothing before leaving the work area to minimize the potential that other areas or rooms will be contaminated or that the worker will bring home lead-contaminated dust; and
- promptly clean-up dust and debris using a suitable dry method (e.g., HEPA-filter equipped vacuum) and a final wet washing with a detergent-based solution and clean water rinse.

### 3. Properly staging projects and jobs can isolate tasks that generate substantial lead-contaminated dust and debris, thereby limiting the need for lead dust minimization work practice precautions.

One of the keys to efficiently integrating lead dust minimization work practices into renovation and remodeling projects is proper staging of the work. Construction tasks that can create dust and debris, such as demolition and surface preparation for repainting, often occur at the beginning of the project. Once these tasks and the associated clean-up are completed, the remainder of the tasks can be conducted with less extensive precautions.

**4. Dust testing should be used to measure whether lead-contaminated dust was controlled.**

Dust testing can determine whether interior renovation, remodeling or repainting activities have left unacceptable levels of lead-contaminated dust that could be hazardous to occupants. Such testing should be considered upon completion of interior projects to determine whether lead dust was adequately controlled and/or eliminated. For projects and tasks where substantial lead dust are likely to be generated, dust testing is critical to ensure that the unit is safe to reoccupy. Dust clearance tests can also serve as performance standards to provide contractors with an alternative to following specific lead dust minimization protocols, provided that occupants are restricted from entering work rooms or areas and independent testing documents that the work area is safe for re-occupancy (i.e., dust lead levels are below state or federal standards).

**5. The protection of workers from harmful lead exposures is more properly covered by OSHA's Lead Exposure in Construction Standard. (29 CFR 1926.62)**

This manual describes work practices that are designed to protect occupants from harmful lead exposure and minimize lead in the environment. It recommends that workers use protective clothing while performing many interior and exterior renovation and remodeling tasks, and that the protective clothing be HEPA vacuumed and/or discarded any time a worker leaves the work area or room. The purpose of this recommendation is to minimize the potential that other areas or rooms of the building could be contaminated as the worker moves beyond the primary work area or room. Additionally, the recommendation is intended to prevent possible worker take-home lead exposures that could endanger family members.

The Occupational Safety and Health Administration (OSHA) has promulgated a Lead Exposure in Construction Standard (29 CFR 1926.62) which applies to all occupational exposures to lead in the course of construction work. Accordingly, lead-related worker safety and respiratory protection procedures during renovation and remodeling should be guided by this standard.

### III. INTERIOR RENOVATION AND REMODELING: BASIC CONSTRUCTION TASKS

Renovation, remodeling and painting contractors routinely perform many construction tasks on a daily basis. When these tasks occur during interior projects in residential properties built before 1978, lead-contaminated dust and debris could be created if lead-based paint is disturbed. Depending upon the extent of the dust and debris, lead exposures to residential occupants range from minimal to extremely dangerous.

This chapter groups interior-based construction tasks according to the potential for generating lead-contaminated dust and debris, and describes the work practices necessary to limit and control occupant exposures and building contamination. The practices described herein are not intended to apply to residential properties with extensive deferred maintenance. In such cases, a good rule of thumb would be to always use the most extensive level of lead dust minimization work practice precautions.

These specifications define three levels of lead dust-generating tasks: minimal, moderate, and substantial. Exhibit 1 on page 7 identifies the common renovation and remodeling tasks that fall into the various lead dust-generating levels and also briefly describes the work practice specifications appropriate for each. This table thus summarizes the chapter. It lists the common tasks, groups those tasks by their likely potential to create lead-contaminated dust, and articulates work practices designed to minimize occupant lead exposures and limit environmental contamination taking into account cost considerations.

For example, removing paint with a heat gun operating under 1,100°F is considered a Level 3: Substantial Lead Dust-Generating Task. The occupant protection measures are: restricting access to the room after work begins; requiring workers to wear protective clothing; and covering the floor, sealing the room and covering all windows with protective sheeting. Once work is completed, the sheeting should be wet-misted, rolled-up and disposed of in a heavy duty bag, and the work room and tools should be HEPA-vacuumed and wet washed. (Heavy duty bags mean non-permeable, puncture resistant disposable bags.)

In the pages that follow, the three levels of dust generating tasks are presented. The tasks associated with each level and the procedures for minimizing and controlling such dust and debris are discussed. For the ease of the reader, several exhibits are presented to streamline the text and facilitate a comparison of dust minimization procedures among the various levels. Exhibit 2 identifies the tools, supplies and equipment needed for each level. Exhibit 3 describes how to set-up the work area. Exhibit 4 discusses final clean-up and waste disposal procedures. These exhibits are consistent with the overall theme of this manual: increasing the amount of dust generated during renovation and remodeling activities triggers added dust minimization and control precautions. Exhibits 2, 3, and 4 depict how the tools, as well as set-up, final clean-up, and waste disposal procedures increase in complexity and stringency with the increase in likely dust generation. These exhibits are located at the end of this chapter on pages 12 through 14 for easy reference.

### Exhibit 1: Lead Dust Minimization Work Practices For Interior Renovation Tasks

(This exhibit is an overview and does not contain some items. See the text for a complete discussion of each level.)

Tasks Performed On Painted Surfaces	Occupant Protection	Dust Minimization and Containment	Final Clean-up and Waste Disposal
<p><b>Level 1: Minimal Lead-Dust Generating Tasks</b></p> <ul style="list-style-type: none"> <li>wet sanding small areas (less than 2 ft<sup>2</sup> per room)</li> <li>drilling painted surfaces</li> <li>removing paint by applying and removing chemical strippers</li> </ul>	⇒	⇒ If using chemical stripper, place protective sheeting directly underneath work area to collect effluent	⇒ HEPA vacuum & wet wash ⇒ dispose of protective sheeting in heavy duty bag or container
<p><b>Level 2: Moderate Lead-Dust Generating Tasks</b></p> <ul style="list-style-type: none"> <li>dry hand sanding less than 2 ft<sup>2</sup> per room or around electrical outlets</li> <li>dry hand scraping less than 2 ft<sup>2</sup> per room or around electrical outlets</li> <li>removing carpet or non-painted flooring</li> <li>hand-sawing</li> <li>chiseling</li> <li>prying with a crow or pry bar</li> <li>wet sanding more than 2 ft<sup>2</sup> per room</li> <li>removing whole building components with paint in good condition</li> <li>dry machine sanding using a sander with HEPA-filtered vacuum</li> <li>using an electric planer with HEPA-filtered vacuum</li> </ul>	⇒ ⇒ ⇒ ⇒	⇒ close & cover HVAC vents with protective sheeting ⇒ cover floor of work area with protective sheeting ⇒ wrap removed components with deteriorated paint in protective sheeting	LEVEL 1 <i>plus</i> ⇒ wet mist protective sheeting, roll up & dispose in heavy duty bag
<p><b>Level 3: Substantial Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>using an electric planer</li> <li>cutting using an electric circular or reciprocating saw</li> <li>removing paint with a heat gun operating under 1,100° F</li> <li>dry hand sanding or hand scraping remaining dry residue after removing paint with chemical strippers</li> <li>removing window systems or components if paint is in very poor condition</li> <li>demolishing painted surfaces using hand or power tools</li> </ul>	LEVEL 2 <i>plus</i> ⇒ ⇒ ⇒ ⇒	LEVEL 2 <i>plus</i> ⇒ cover floor and seal door to work room with protective sheeting ⇒ close & cover windows with protective sheeting ⇒ wet mist affected surfaces, if feasible wrap all painted components removed from work room in protective sheeting	LEVEL 2 <i>plus</i> ⇒ clean work room & tools ⇒ HEPA vacuum and/or dispose of protective worker clothing in heavy duty bag

## Level 1: Minimal Lead Dust-Generating Tasks

These tasks are unlikely to create more than a minimal amount of lead-contaminated dust and debris. Because limited painted surface areas will be disturbed, minimal precautions are needed beyond clean-up.

### Lead Dust Minimization Work Practices Specification

To properly limit and control lead-contaminated dust and debris when performing these tasks, contractors should follow the specifications below using the tools listed in Exhibit 2 on page 12.

#### *Minimal Tasks*

- *Wet sanding small areas (less than 2 ft<sup>2</sup>) of painted surfaces in a room;*
- *Drilling painted surfaces;*  
*and*
- *Removing paint by applying and removing chemical strippers.*

**Set-Up Procedures.** Restrict occupant access to the immediate work area until final clean-up is complete (see Exhibit 3 on page 13).

**Dust Minimization and Control Procedures During The Work.** The only special procedure needed is to wet mist the surface before sanding or drilling. However, when applying chemical strippers and removing the wet slurry during paint removal, place protective sheeting directly beneath the work area to collect and contain the effluent.

**Final Clean-Up and Waste Disposal Procedures.** Once the work is completed, clean the work area with a HEPA-filtered vacuum and wet cleaning solution, and dispose of all debris in heavy duty bags. (Exhibit 4 on page 14 describes these procedures in more detail.)

## Level 2: Moderate Lead Dust-Generating Tasks

These basic tasks are performed using hand tools and some power tools that generate friction or mechanical impact, and may disturb larger painted surface areas. For that reason, these tasks are likely to create a moderate amount of lead-contaminated dust and debris.

### Lead Dust Minimization Work Practices Specification

To properly limit and control lead-contaminated dust and debris when performing these tasks, contractors should follow the specifications below using the tools listed in Exhibit 2 on page 12.

**Set-Up Procedures.** These include restricting occupant access to the work area until final clean-up occurs and containing dust to the work area through the use of protective sheeting. (The procedures are described in detail in Exhibit 3 on page 13.)

### Dust Minimization and Control Procedures During The Work.

- Use a razor or utility knife to cut all painted joints prior to removing whole building components to avoid breaking intact painted surfaces.
- Wrap all removed components with deteriorated paint in protective sheeting.
- If workers leave the activity area before completion of the task and/or prior to final clean-up, use a HEPA-filter equipped vacuum to remove any visible dust or debris from their shoes or clothing, and wet wipe shoes with a disposable hand towel.
- When removing carpet, wet mist both the top and back sides before rolling it inward. Cut the carpet into smaller pieces so that it can either be placed in heavy duty bags or wrapped in protective sheeting. Tape it shut prior to disposal.

**Final Clean-Up and Waste Disposal Procedures.** Once the work is completed, clean the work area and buffer zone with a HEPA-filtered vacuum and wet cleaning solution, dispose of protective sheeting and debris in heavy duty bags, and clean worker clothing before leaving the work area. (Exhibit 4 on page 14 describes these procedures in more detail.)

### Moderate Tasks

- *Dry hand sanding less than 2 ft<sup>2</sup> of painted surfaces per room, hallway or stairwell, or dry sanding around electrical outlets;*
- *Dry hand scraping less than 2 ft<sup>2</sup> of painted surfaces per room, hallway or stairwell, or dry scraping around electrical outlets;*
- *Removing carpet or other non-painted floor materials;*
- *Hand-sawing painted surfaces;*
- *Chiseling painted surfaces;*
- *Prying painted surfaces using a crow bar or pry bar;*
- *Wet sanding more than 2 ft<sup>2</sup> of painted surfaces in a room, hallway or stairwell;*
- *Removing whole building components, both painted, if the paint is in good condition, and unpainted (i.e., trim/casement/molding, cabinets, kitchen and bath fixtures, electrical fixtures, window components);*
- *Dry sanding using an electric sander with a HEPA-filter equipped vacuum attachment; and*
- *Using an electric planer on painted surfaces with a HEPA-filter equipped vacuum attachment.*

### Level 3: Substantial Lead Dust-Generating Tasks

Level 3 tasks are performed with both hand and power tools, and involve significant friction and/or impact activities intended to abrade, cut or demolish painted surfaces. The potential for disturbing lead-based paint is high. Therefore, these tasks are likely to create substantial lead-contaminated dust.

#### Lead Dust Minimization Work Practices Specification

To properly limit and control lead-contaminated dust and debris when performing these tasks, contractors should follow the specifications below using the tools listed in Exhibit 2 on page 12.

**Set-Up Procedures.** These include restricting occupant access to the work room until final clean-up occurs, containing dust in the work room through the use of protective sheeting, and taking additional precautions for occupants. (These procedures are described in detail in Exhibit 3 on page 13.)

#### *Substantial Tasks*

- *Using an electric planer on painted surfaces;*
- *Cutting using an electric circular or reciprocating saw;*
- *Removing paint with a heat gun operating under 1,100 °F;*
- *Dry hand sanding and/or scraping remaining dry residue after removal of paint using chemical strippers;*
- *Removing entire window systems or window components when the paint is in poor condition; and*
- *Demolishing painted surfaces using hand or power tools (e.g., sledge hammer, crow bar, maul, electric circular or reciprocating saw, etc.).*

#### Dust Minimization and Control Procedures During The Work.

- If feasible, wet mist the affected surfaces and/or building components. With larger components it may be simpler to use a pressurized garden sprayer.
- If removing building components, use a razor or utility knife to score all painted joints to avoid breaking intact painted surfaces.
- If large scale demolition of painted surfaces is being performed, keep as much of the surface intact as possible. Wrap debris in protective sheeting and tape it shut before removing it from the work room and the building.
- If chemical stripping of painted surfaces and components (a Level 1 task) can not be performed off-site or away from the building, use caution when dry hand sanding and/or scraping any remaining dry residue left over from the chemical stripper.
- If workers leave the work area or room before completion of the task and/or prior to final clean-up, use a HEPA-filter equipped vacuum to remove any visible dust from protective clothing and work shoes, dispose of protective clothing if not re-usable, and wet wipe shoes with a disposable hand towel.
- If the task is not completed prior to the end of the day, use a HEPA-filter equipped vacuum to clean-up any visible dust. Place construction debris in heavy duty bags, goose-necking and taping the bags shut. Block entrances to the work room with suitable barriers in addition to hanging protective sheeting over any doorways.

**Final Clean-Up and Waste Disposal Procedures.** Once the work is completed, dispose of removed building components and construction debris appropriately, clean the work room with a

HEPA-filtered vacuum and wet cleaning solution, and HEPA vacuum or dispose of protective worker clothing (if not re-usable) before leaving the work room. (Exhibit 4 on page 14 describes these procedures in more detail.)

**Post Activity Testing Procedures.** Conduct lead dust testing in the work area or room. Collect at least one dust sample from the floor of the work area or room. Submit the sample to an EPA-recognized laboratory for analysis. If any dust sample exceeds the EPA/HUD or state recommended dust clearance level for floors (whichever is more stringent), repeat the cleaning procedure in the work area or room.

## Exhibit 2: Tools, Supplies and Equipment for Interior Renovation Tasks

(This exhibit is an overview and does not contain some items. See the text for a complete discussion of each level.)

Tools	Level 1	Level 2	Level 3
Wet/dry sandpaper or wet sanding block	X	X	X
HEPA filter-equipped vacuum	X	X	X
Two-sided bucket or two buckets with wringers	X	X	X
Disposable hand towels	X	X	X
Heavy duty bags - non-permeable, puncture resistant disposable bags	X	X	X
Hand-held misting device	X	X	X
Squeegee or wringer mop	X	X	X
General purpose household detergent or cleaning agent	X	X	X
Protective sheeting - non-permeable, puncture resistant disposable sheeting	X <sup>3</sup>	X	X
Chemical stripping agent (the use of methylene chloride is not recommended)	X		
Duct tape		X	X
Razor or utility knife		X	X
Machine sander with HEPA-filter equipped vacuum		X	
Machine planer with HEPA-filter equipped vacuum		X	
Protective			X
Staple gun			X
Lead-dust sampling supplies (wipes, wipe containers, gloves, templates or tape measure, lab transmittal form)			X

<sup>3</sup>Used to collect and contain effluent when removing paint with chemical strippers.

### Exhibit 3: Interior Set-Up Procedures

#### Level 1

1. **Minimize access to immediate work area.** Do not allow occupants in the immediate work area until final clean-up is completed.

#### Level 2: Level 1 *PLUS*

1. **Restrict access to work area.** Do not allow occupants in work area during the work and until final clean-up is completed. Establish barriers that restrict access.
2. **Contain dust in work area.**
  - Turn off HVAC systems. Close and cover duct vents in the work area with protective sheeting. Disconnect the power source for room air conditioner and cover unit with protective sheeting.
  - Cover the following areas with protective sheeting: floor directly beneath the work area and extending out at least 4 feet; pathway from the entrance of the work area to the exterior doorway of the building.
  - Remove occupant belongings from the work area or cover them with protective sheeting.
  - Use duct tape or equivalent to secure all protective sheeting to the floor or other horizontal surfaces.
3. **Take safety precautions.** If removing electrical fixtures, shut off electrical power to the work area.

#### Level 3: Level 2 *PLUS*

1. **Restrict access to work room.** Do not allow occupants in work room during work and until final clean-up and post-activity dust testing are completed.
  - Contain dust in the work room.
  - Cover the following areas in the work room with protective sheeting: floor; duct vents; windows (unless work will occur on these surfaces). Hang two layers of protective sheeting from all doorways into the work room. Attach sheeting with duct tape and cut a vertical slit in both pieces to permit worker access.
2. **Take added safety precautions.**
  - In occupied multifamily buildings, post lead hazard caution/warning signs outside the apartment unit and in common areas (e.g., hallways and entry foyers).
  - Instruct workers to wear protective clothing.

## Exhibit 4: Interior Final Clean-Up and Waste Disposal Procedures

### Level 1

1. **HEPA vacuum and wet clean work area.**
  - Use a HEPA-filtered vacuum to remove any visible dust and debris.
  - Wet clean using disposable hand towels or a squeegee or wringer mop. Fill a two-sided bucket with detergent water solution on one side and clean water on the other side. Dip the towel or mop in the detergent solution side of the bucket and clean the area. Wring out the mop or take a fresh towel, dip it in the clean water side of the bucket and clean the area again. Empty the waste water in the toilet.
2. **Place debris in heavy duty bag.** Place any debris in a heavy duty bag and dispose according to applicable state and federal standards. Contain effluent generated during on-site chemical stripping in a suitable container. (Such effluent is likely to be "hazardous waste.")

### Level 2: Level 1 *PLUS*

1. **Wrap all removed components with deteriorated paint in protective sheeting.**
2. **Dispose of protective sheeting.** Wet mist all protective sheeting before rolling inward to capture debris. Tape the edges shut and place in a heavy duty bag. Goose neck the bag and tape it shut. Remove the bag from the building.
3. **HEPA vacuum and wet clean the work area and buffer zone.** Extend cleaning procedures to all area covered by protective sheeting and two additional feet.
4. **Clean worker clothing before leaving the work area.** Clean worker clothing and shoes using a HEPA-filtered vacuum to remove visible dust and debris. Wet wipe shoes with disposable hand towels.

### Level 3: Level 2 *PLUS*

1. **Dispose of removed building components and construction debris.**
  - Place building components with deteriorated paint and larger construction debris in heavy duty bags or wrap in protective sheeting. Use duct tape to secure and close. Remove components from the building.
  - Dispose of waste in accordance with applicable state or federal guidelines.
2. **HEPA vacuum and wet clean the work room.** Extend cleaning procedures to work room, cleaning all horizontal and vertical surfaces in the room. Clean all hand and electric tools before removing them from the work room with a HEPA-filtered vacuum and wet cleaning solution.
3. **HEPA vacuum or dispose of worker protective clothing before leaving the work room.** Once the room is cleaned, HEPA vacuum and then remove worker protective clothing. If not re-usable, dispose of protective clothing in heavy duty bags and HEPA vacuum the floor where clothing was removed. Goose neck and tape bags shut. Remove bags from the building.

## IV. EXTERIOR RENOVATION AND REMODELING: BASIC CONSTRUCTION TASKS

Renovation and remodeling projects frequently involve work on building exteriors. If a residential property built before 1978 is undergoing such work, it is possible that lead-contaminated dust and debris could be created when lead paint is disturbed. Depending upon the extent of the dust and debris and other factors, lead exposures to occupants can range from minimal to extremely hazardous.

This chapter groups exterior renovation and remodeling tasks into three levels according to the likelihood each task level has for generating lead-contaminated dust and debris. Lead dust minimization work practices that limit and control occupant lead exposures and lead contamination to the environment are then identified. The practices described herein are not intended to apply to residential properties with extensive deferred maintenance. In such cases, a good rule of thumb would be to always use the most extensive level of lead dust minimization work practice precautions.

These specifications define three levels of lead-dust-generating tasks: minimal, moderate, and substantial. Exhibit 5 on page 16 identifies which common renovation and remodeling tasks fall into the various lead dust-generating levels and also briefly describes the work practice specifications appropriate for each. This table thus summarizes the chapter. It lists the common tasks, groups those tasks by their likely potential to create lead dust, and articulates work practices designed to minimize occupant lead exposures and limit environmental contamination taking into account cost considerations.

For example, removing paint with a heat gun operating under 1,100°F is considered a Level 3: Substantial Lead Dust-Generating Task. To protect occupants and workers, it is recommended that contractors: remove or cover play equipment in the work area or buffer zone; cover the ground, windows and HVAC compressor/condenser box with protective sheeting; and turn off the HVAC system. Final clean-up requires that all sheeting be vacuumed and wet-misted before being rolled-up and disposed of in a heavy duty bag.

In the pages that follow, the three levels of dust generating tasks are presented. The tasks associated with each level and the procedures for minimizing and controlling dust and debris are discussed. For the ease of the reader, several exhibits are presented to streamline the text and facilitate a comparison of dust minimization procedures between the various levels. Exhibit 6 identifies the tools, supplies and equipment needed for each level of dust generating tasks. Exhibit 7 describes how to set-up the work area. Exhibit 8 discusses final clean-up and waste disposal procedures. These exhibits are consistent with the overall theme of this manual: increasing the amount of dust generated during renovation and remodeling activities triggers added precautions. Exhibits 6, 7, and 8 depict how the tools, as well as set-up, final clean-up, and waste disposal procedures increase in complexity and stringency with the increase in likely dust generation. These exhibits are located at the end of this chapter on pages 20 through 22 for easy reference.

### Exhibit 5: Lead-Dust Minimization Work Practices For Exterior Renovation Tasks

(This exhibit is an overview and does not contain some items. See the text for a complete discussion of each level.)

Tasks Performed On Painted Surfaces	Occupant Protection	Dust Minimization and Containment	Final Clean-up and Waste Disposal
<p><b>Level 1: Minimal Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• nailing</li> <li>• screwing</li> <li>• drilling</li> <li>• wet sanding/scraping small areas (less than 20 ft<sup>2</sup>)</li> <li>• removing paint by applying and removing chemical strippers</li> </ul>		<p>⇒ If using chemical stripper, place protective sheeting directly underneath to collect effluent</p>	<p>⇒ Dispose of protective sheeting in heavy duty bag or container</p>
<p><b>Level 2: Moderate Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• sawing</li> <li>• chiseling</li> <li>• prying with a crow or pry bar</li> <li>• dry scraping less than 20 ft<sup>2</sup></li> <li>• dry sanding less than 20 ft<sup>2</sup></li> <li>• wet sanding/scraping more than 2 ft<sup>2</sup></li> <li>• removing painted components</li> <li>• removing paint with an orbital or belt sander equipped with a HEPA-filtered vacuum</li> <li>• removing paint using abrasive blasting with a HEPA-filtered vacuum</li> <li>• power-washing painted surfaces with low-pressure equipment</li> </ul>	<p>⇒ focus on work area</p> <p>⇒ restrict access to work area</p> <p>⇒ clean worker clothing when leaving work area</p> <p>⇒ perform visual examination for paint chips, dust and debris</p>	<p>⇒ protective sheeting in work area &amp; extend out 10 ft.</p> <p>⇒ mist work surfaces, if feasible</p> <p>⇒ barriers to contain run-off from power washing</p>	<p>⇒ wet mist protective sheeting &amp; roll up</p> <p>⇒ collect paint chips/debris</p> <p>⇒ dispose of debris in protective sheeting or heavy duty bags</p>
<p><b>Level 3: Substantial Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• electric planing</li> <li>• removing paint with a heat gun operating under 1,100° F</li> <li>• dry hand sanding or hand scraping remaining dry residue after removing paint with chemical strippers</li> <li>• demolishing painted surfaces using either hand or power tools</li> <li>• removing paint using high-pressure water or hydroblasting equipment</li> </ul>	<p>LEVEL 2 plus</p> <p>⇒ focus on work area &amp; buffer zone</p> <p>⇒ remove/cover play equipment</p>	<p>LEVEL 2 plus</p> <p>⇒ cover windows within the work area with plastic sheeting</p> <p>⇒ turn off and cover HVAC if compressor/condenser is in work area/buffer zone</p> <p>⇒ control run-off and debris from hydroblasting</p>	<p>LEVEL 2 plus</p> <p>⇒ daily cleaning with multi-day jobs</p>

## Level 1: Minimal Lead Dust-Generating Tasks

Level 1 tasks involve simple mechanical activities using hand tools. They are unlikely to create more than minimal amounts of lead-contaminated dust and debris because the tasks do not typically damage large surface areas or involve repeated or heavy abrasion to painted surfaces.

### Lead Dust Minimization Work Practices Specification

To properly limit and control lead-contaminated dust and debris when performing these tasks, contractors should follow the specifications below using the tools listed in Exhibit 8 on page 30.

#### *Minimal Lead Dust-Generating Tasks*

- *Nailing into painted surfaces;*
- *Screwing into painted surfaces;*
- *Drilling into painted surfaces;*
- *Wet sanding small areas (less than 20 ft<sup>2</sup>) of total exterior painted surfaces; and*
- *Removing paint by applying and removing chemical strippers.*

**Set-Up Procedures.** Level 1 requires no special procedures.

**Dust Minimization and Control Procedures During the Work.** When applying chemical strippers and removing the wet slurry during paint removal, place protective sheeting directly beneath the work area to collect and contain the effluent.

**Final Clean-Up and Waste Disposal Procedures.** After applying and removing chemical strippers during paint removal, dispose of protective sheeting in heavy duty bags or containers. (Exhibit 8 on page 22 describes these procedures in more detail.)

## Level 2: Moderate Lead Dust-Generating Tasks

Level 2 tasks involve cutting, puncturing, sanding, removing or power-washing painted surfaces. Typically, the activity will be limited to a small area. If a greater surface area is involved, the work should be performed wet or by using a sander equipped with a HEPA-filter equipped vacuum attachment to minimize the dispersal of dust and debris. These tasks are likely to create a moderate amount of lead-contaminated dust.

### Lead Dust Minimization Work Practices Specification

To properly limit and control lead-contaminated dust, and debris when performing these tasks, contractors should follow the specifications below using the tools listed in Exhibit 6 on page 20.

**Set-Up Procedures.** These include: restricting occupant access to the immediate work area; placing protective sheeting under the work area and extending out 10 feet; and adjusting protective sheeting to control run-off during power washing. (These procedures are described in detail in Exhibit 7 on page 21.)

### Dust Minimization and Control Procedures During the Work.

- To the extent feasible, wet mist affected building components and surfaces with either a hand-held wet misting bottle or a pressurized garden sprayer. Components at higher elevations may be more effectively misted from the ground using a pressurized garden sprayer.
- Wipe contractor shoes with disposable towels moistened with a wet cleaner, remove visible dust from clothing before walking off the protective sheeting, and vacuum clothing with a HEPA-filter equipped vacuum.
- Do not enter the residence wearing work clothes, unless clothes have been HEPA vacuumed and shoes wiped clean.

**Final Clean-Up and Waste Disposal Procedures.** Once the work is completed, wet mist and dispose of protective sheeting, dispose of debris from power washing, and remove any visible paint chips or debris. (Exhibit 8 on page 22 describes these procedures in more detail.)

**Post-Activity Testing.** Conduct a visual examination of the work area and surrounding area to check for any remaining visible paint chips and debris.

### Moderate Lead Dust-Generating Tasks

- *Sawing painted surfaces;*
- *Chiseling painted surfaces;*
- *Prying painted surfaces using a crow bar;*
- *Dry hand scraping more than 2 ft<sup>2</sup> but less than 20 ft<sup>2</sup> of total exterior painted surfaces;*
- *Dry hand sanding more than 2 ft<sup>2</sup> but less than 20 ft<sup>2</sup> of painted surfaces;*
- *Wet sanding/scraping more than 2 ft<sup>2</sup> of painted surfaces;*
- *Removing painted components (e.g., doors, stairs and landing systems);*
- *Dry machine sanding using an electric sander with a HEPA-filter equipped vacuum attachment;*
- *Removing paint using abrasive blasting equipment with a HEPA-filter vacuum attachment; and*
- *Power-washing painted surfaces using equipment operating at a pressure of less than 5,000 pounds per square inch (PSI).*

### Level 3: Substantial Lead Dust-Generating Tasks

Level 3 tasks involve abrading or breaking large painted surface areas (without taking precautions to work wet) or heating painted surfaces. Such activities can release substantial amounts of lead-contaminated dust or create lead fumes. Dry hand sanding or scraping any remaining residue left over from chemical stripping to remove paint (a Level 1 task) can also create lead-contaminated dust.

#### Lead Dust Minimization Work Practices Specification

To properly limit and control lead-contaminated dust and debris when performing these tasks, contractors should follow the specifications below using the tools listed in Exhibit 6 on page 20.

#### *Substantial Lead Dust-Generating Tasks*

- *Using an electric planer on painted surfaces;*
- *Removing paint with a heat gun operating under 1,100°F;*
- *Dry hand sanding or scraping remaining dry residue after removing paint with chemical strippers; and*
- *Demolishing painted surfaces using either hand or power tools (e.g., sledge hammer, maul, circular or reciprocating saw).*
- *Removing paint by using hydro-blasting equipment operating at a pressure in excess of 5,000 PSI*

**Set-Up Procedures.** These include: restricting access to the work site; removing nearby household items; extending protective sheeting out 10 feet; and covering some windows and some outdoor HVAC system elements. Also, during hydro-blasting take special precautions to control water run-off and debris; and cover windows and HVAC system components within 20 feet of the work area. (These procedures are described in detail in Exhibit 7 on page 21.)

#### Dust Minimization and Control Procedures During the Work.

- To the extent feasible, wet mist the affected components and surfaces. Components at lower elevations can be misted using a hand-held wet misting bottle or a pressurized garden sprayer. Components at higher elevations may be more effectively misted from the ground using a pressurized garden sprayer. Such misting is not appropriate before using a heat gun.
- Vacuum work clothes with a HEPA-filter equipped vacuum and wipe work shoes with disposable towels moistened with a wet cleaner before walking off the protective sheeting.
- Do not enter residence wearing work clothes, unless work clothes have been removed or HEPA vacuumed and shoes cleaned.
- When hydroblasting, limit the volume of water used and take steps to control water run-off to avoid contamination of the nearby environment and possible contamination of the sewers and storm drains. For example, minimize the flow of water over collected debris (e.g., if structure is on a grade begin on the uphill side and work down grade). Collect any wet debris promptly and dispose of it in heavy duty bags. Wastewater should be controlled in accordance with applicable Federal, State, and local standards.

**Final Clean-Up and Waste Disposal Procedures.** Perform daily cleaning, wet mist and dispose of protective sheeting in heavy duty bags, and remove any visible paint chip or debris. (Exhibit 8 on page 22 describes these procedures in more detail.)

**Post-Activity Testing.** Conduct a visual examination of the work area and surrounding area to check for any remaining visible paint chips and debris.

### Exhibit 6: Tools, Supplies and Equipment for Exterior Renovation Tasks

(This exhibit is an overview and does not contain some items. See the text for a complete discussion of each level.)

Tools	Level 1	Level 2	Level 3
Wet/dry sandpaper or wet sanding block	X	X	X
HEPA filter-equipped vacuum		X	X
Disposable hand towels		X	X
Heavy duty bags - non-permeable, puncture resistant disposable bags		X	X
Hand-held misting device and/or pressurized garden sprayer		X	X
Protective sheeting - non-permeable, puncture resistant disposable sheeting	X <sup>4</sup>	X	X
Duct tape		X	X
Two by four planks/boards or other items to anchor protective sheeting		X	X
Machine sander with HEPA-filter equipped vacuum		X	
Power washing equipment (including run-off control and filtering supplies)		X	
Abrasive blasting equipment with a HEPA-filter equipped vacuum		X	
Equipment to seal off the work area (e.g., barrier tape, temporary fencing)			X
Warning signs			X
Hydro-blasting equipment (including run-off control and filtering supplies)			
Protective clothing			
Chemical stripping agent (the use of methylene chloride is not recommended)	X		

<sup>4</sup>Used to collect and contain effluent when removing paint with chemical strippers.

## Exhibit 7: Exterior Set-up Procedures

**Level 1 requires no special procedures.**

### Level 2

1. **Minimize access to immediate work area.** Do not allow occupants in the immediate work area and 6 feet beyond.
2. **Cover ground with protective sheeting.** Place protective sheeting under the work area and extend out at least 10 feet. Tape sheeting to the building foundation. Tape outside edges to hard surfaces or weight down edges with 2 by 4 planks/boards or similar objects to secure to the ground. If a ladder is used, cut slits in the sheeting to allow the bottom to rest on the ground.
3. **Adjust protective sheeting to control run-off during power washing.** Raise edges of protective sheeting to create a basin that controls run-off. Establish procedures to capture wet debris (e.g., filter run-off with cheesecloth).

### Level 3: Level 2 *PLUS*

1. **Restrict access to the work site.** Restrict access to the work site from non-workers by installing barrier tape, warning signs, and/or fencing. If feasible, request that occupants leave the building when work occurs.
2. **Remove nearby occupant belongings.** Remove toys and play equipment and cover sandboxes within 20 feet of the work area with protective sheeting.
3. **Cover some windows and some outdoor HVAC system components.** Cover windows within 6 feet of the work area with protective sheeting. If the HVAC compressor/condenser box is near the work area or could be contaminated with dust and debris, turn off the HVAC system and cover the compressor/condenser box with protective sheeting.
4. **When hydro-blasting cover added windows and outdoor HVAC system components.** Cover windows within 20 feet of the work area. Cover any compressor/condenser box within 20 feet of the work area.

**Exhibit 8: Exterior Final Clean-Up and Waste Disposal Procedures****Level 1: Application and removal of chemical strippers only.**

1. After applying and removing chemical strippers during paint removal, dispose of protective sheeting in heavy duty bags or containers.

**Level 2**

1. **Dispose of wet debris from power washing and protective sheeting.** Place any wet debris from power washing in a heavy duty bag. Wet mist all protective sheeting used during all other tasks before rolling inward to capture debris. Tape the edges shut and place the sheeting in a heavy duty bag. Goose neck all heavy duty bags and tape shut. Remove bags from the work area and dispose according to applicable state and federal standards. Use a durable container for heavy or sharp edged debris.
2. **Remove paint chips and debris.** After removing protective sheeting, clean up any remaining visible paint chips and debris. Place all debris in a heavy duty bag. Remove bag from work area and dispose according to applicable state and federal standards.

**Level 3: Level 2 PLUS**

1. **Perform daily cleaning.** If the work extends beyond one day, disposal of protective sheeting and removal of paint chips and debris must occur daily as well as at the end of the job. During hydroblasting, collect run-off and remove wet debris daily.
2. **Dispose of debris from hydroblasting.** Collect all wet debris and filtered runoff. Place in heavy duty bags and dispose according to state and federal standards.

## REFERENCES

- Amitai, Y., Brown, M.J., Graef, F.W., and Cosgrove, E. 1991. "Residential Deleading: Effects on the Blood Lead Levels of Lead-Poisoned Children." *Pediatrics*, 88(5):893-897.
- ARAMSCO Products Catalog 1998, ARAMSCO, Thorofare, NJ
- Bates, M., Wyatt R, et. Al., "Old paint removal and blood lead levels in children," *New Zealand Medical Journal* 1997; 110(1053):373-377.
- Bellinger, D., Leviton, A., et al. "Correlates of low-level lead exposure in urban children at 2 years of age," *Pediatrics* 1986; 77:826-33.
- Buchwald-Fellis, M. November 1997. "Presentation at the American Public Health Association Conference."
- California Department of Health Services, Occupational Lead Poisoning Prevention Program, March 1996. *Painting Contractors Guide to Lead Safety*.
- California Department of Health Services, Occupational Lead Poisoning Prevention Program, February 1998. *California Painters Project: Helping Small Business Work Safely With Lead*.
- Dixon, S., Tohn, E. February 1998. "How Much Cleaning is Enough?" (submitted for publication)
- Farfel, M.R. and Chisolm, J.J. Jr. 1990. "Health and Environmental Outcomes of Traditional and Modified Practices for Abatement of Residential Lead-Based Paint." *American Journal of Public Health*. 80(10):1240-1245.
- Marino, P.E., Landrigan, P.J., et al. "A Case Report of Lead Paint Poisoning During Renovation of a Victorian Farmhouse," *American Journal of Public Health*, October 1990, 80(10):1183-1185.
- Maryland annotated code, 26.16.03E(2).
- Minnesota Department of Health, "Safely Working With Lead While Remodeling the Older Home: Testing the Home for Lead; Removing Carpet; Taking Down and Wall; Removing Paint From Exterior Surfaces; Removing and Covering Interior Paint; Replacing Doors, Windows and Trim; Working with Soil; Disposal of Lead-Contaminated Waste."
- National Association of the Remodeling Industry, (undated). *HUD/NARI Lead Remodeler's Training Program*.
- National Environmental Training Association, 1997. *Lead-Based Paint Maintenance Training Program: Work Smart, Work Wet and Work Clean to Work Lead Safe*.
- National Institute of Building Sciences, May 1995. *Lead-Based Paint: Operations and Maintenance Work Practices Manual for Homes and Buildings*.
- National Institute for Occupational Safety and Health (NIOSH), May 1993. "HETA – Ohio University, Athens, Ohio," HETA 92-095-2317.

NIOSH, July 1997. "Cincinnati, Ohio: People Working Cooperatively," HETA #93-0818-2646.

Rabinowitz, M., Leviton, A., et. al., "Home refinishing, lead paint, and infant blood lead levels." *American Journal of Public Health* 1985, 75:40304.

Sussell, A. ed., January 1998. "Protecting Workers Exposed to Lead-Based Paint Hazards: A Report to Congress." (NIOSH Publication #98-112).

Sussell, A., March 1998. "Letter to Ms. Lynn Bibeault, Rhode Island Department of Health."

Sussell, A. February 1998. "Presentation at New England Lead Coordinating Committee."

Tohn, E., October 1997. "A Preliminary Review of the Vermont Experience with Essential Maintenance Practices and Lead Disclosure."

U.S. Department of Housing and Urban Development (HUD), 1991. *The HUD Lead-Based Paint Abatement Demonstration (Fair Housing Administration)*. (HC-5831)

U.S. HUD, June 1995. *Guidelines For The Evaluation and Control of Lead-Based Paint Hazards in Housing*.

U.S. HUD, July 1995. *Lead-Based Paint Hazard Reduction and Financing Task Force, Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing*.

U.S. HUD, July 1995. *Regulatory Impact Analysis of the Proposed Rule on Lead-Based Paint: Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally-Owned Residential Property and Housing Receiving Federal Assistance*.

U.S. HUD, June 1996. *HUD Issues Proposed Rule to Revise Its Lead-Based Paint Regulations for Federally Owned Residential Property and Housing Receiving Federal Assistance*.

U.S. HUD, March 1998. *Evaluation of the HUD Lead-Based Paint Hazard Control Grant Program: Fifth Interim Report*.

U.S. Environmental Protection Agency (EPA), July 1994. "Guidance on Residential Lead-Based Paint, Lead Contaminated Dust, and Lead Contaminated Soil." (60 FR 47248)

U.S. EPA, 1995. *A Review of Studies Addressing Lead Abatement Effectiveness*. (EPA 747-R-95-006)

U.S. EPA, February 1995. *Comprehensive Abatement Performance Pilot Study: Volume 1: Results of Lead Data Analysis*. (EPA 747-R-93-007)

U.S. EPA, March 1995. *Laboratory Evaluation of Dust and Dust Lead Recoveries for Samplers and Vacuum Cleaners: Volume 1: Objectives, Methods and Results*. (EPA 747-R-94-004A)

U.S. EPA, May 1997. *Lead Exposures Associated With Renovation and Remodeling Activities: Summary; Volumes I-II; Worker Characterization and Blood-Lead Study*. (EPA 747-R-96-005 - 008)

U.S. EPA, September 1997. *Reducing Lead Hazards When Remodeling Your Home*. EPA 747-K-97-001.

29 CFR Part 1926, Lead Exposure in Construction.

40 CFR Part 745, Requirements for Lead-Based Paint Activities

0

## GLOSSARY<sup>5</sup>

**Abatement:** A measure or set of measures designed to permanently eliminate lead-based paint hazards or lead-based paint. Abatement strategies include, but are not limited to, the removal of lead-based paint, permanent enclosure or encapsulation of lead-based paint, replacement of lead-painted surfaces or fixtures, and removal or covering of lead-contaminated soil. All of these strategies require preparation, clean-up, waste disposal, and post-abatement clearance testing.

**Accreditation:** A formal recognition that an organization, such as a laboratory, is competent to carry out specific tasks or types of tests.

**Accredited laboratory:** A laboratory that has been evaluated and approved by the National Lead Laboratory Accreditation Program (NLLAP) to perform lead measurement or analysis, usually over a specified period of time.

**Bare soil:** Soil not covered with grass, sod, some other similar vegetation, or paving, including the sand in sandboxes.

**Building component:** Any element of a building that may be painted or have dust on its surface (e.g., walls, stair treads, floors, railings, doors, window sills, etc.).

**Certification:** The process of testing and evaluating against certain specifications the competence of a person, organization or other entity in performing a function or service, usually for a specified period of time.

**Certified:** The designation for contractors who have completed training and other requirements to allow them to safely undertake risk assessments, inspections or abatement work. Risk assessors, inspectors and abatement contractors should be certified by the appropriate state or EPA pursuant to § 745.226(f).

**Clearance examination:** Visual examination and collection of environmental samples by an inspector or risk assessor and analysis by an accredited laboratory upon completion of an abatement project, interim control intervention, or maintenance job that disturbs lead-based paint (or paint suspected of being lead-based). The clearance examination is performed to ensure that lead exposure levels do not exceed standards established by the EPA Administrator pursuant to Title IV of the Toxic Substances Control Act, and that any cleaning following such work adequately meets those standards.

**Code of Federal Regulations (CFR):** The codification of the regulations of Federal agencies. The regulations are published in the *Federal Register*.

**Common area:** A portion of a building that is generally accessible to all occupants. Such an area may include, but is not limited to, stairways, laundry and recreational rooms, playgrounds, community centers, garages, and boundary fences.

---

<sup>5</sup> Many of these definitions are excerpted from 40 CFR 745.223 and the US Department of Housing and Urban Development, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, 1995, pp. G 1 - G-14.

**Containment:** A process to protect workers and the environment by controlling exposures to the lead-contaminated dust and debris created during abatement.

**Deteriorated paint:** Paint that is cracking, flaking, peeling, chipping, or otherwise separating from the substrate of a building component.

**Elevated blood lead level (EBL) child:** A child who has a blood lead level greater than or equal to 10 µg/dl.

**Hazardous waste:** As defined in EPA regulations (40 CFR 261.3), *hazardous waste* is solid waste or a combination of solid wastes that because of its quantity, concentration, or physical, chemical or infectious characteristics may cause or significantly contribute to increases in mortality, serious and irreversible or incapacitating but reversible illnesses, or pose a substantial present or potential hazard to human health or the environment when improperly stored, transported or disposed. As defined in the regulations, solid waste is hazardous if it meets one of four conditions: (1) exhibits a characteristic of hazardous waste (40 CFR Sections 261.20 through 262.24); (2) has been listed as hazardous (40 CFR Section 261.31 through 261.33); (3) is a mixture containing a listed hazardous waste combined with a non-hazardous solid waste, unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste; and (4) is not excluded from regulation as hazardous waste. For lead-based paint abatement waste, hazardous waste is waste that contains more than 5 ppm of leachable lead as determined by the TCLP test, or is waste that is corrosive, ignitable, or reactive and not otherwise excluded.

**Heat gun:** A device capable of heating lead-based paint causing it to separate from the substrate. For lead hazard control work, the heat stream leaving the gun should not exceed 1,100°F (some authorities may use a different temperature).

**Heavy duty bags:** Non-permeable, puncture resistant, disposable bags that are capable of completely containing lead-contaminated dust and debris or other waste and, after being properly sealed, should remain tight with no visible signs of discharge during movement or relocation.

**High-Efficiency Particulate Air (HEPA) filter:** A filter capable of removing particles of 0.3 microns or larger from air at 99.97 percent or greater efficiency.

**Inspection (of paint):** A surface-by-surface investigation to determine the presence of lead-based paint and a report explaining the results of the investigation.

**Inspector:** An individual who has completed training from an accredited program as defined by 40 CFR Part 745 and certified by EPA pursuant to 40 CFR 745.226 to conduct inspections. A certified inspector also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

**Interim controls:** A set of measures designed to temporarily reduce human exposures to lead-based paint hazards including specialized cleaning, repairs, maintenance, painting, temporary containment, and ongoing monitoring of lead-based paint hazards or potential hazards, and the establishment and operation of management and resident education programs. Interim controls include, but are not limited to: dust removal; paint film stabilization; treatment of friction and impact surfaces, installation of soil coverings, such as grass or sod; and land-use controls.

**Interior window sill:** The portion of the horizontal window ledge that protrudes into the interior of the room, adjacent to the window sash when the window is closed (often called the window stool).

**Laboratory analysis:** A determination of the lead content by atomic absorption spectroscopy, inductively coupled plasma emission spectroscopy or laboratory-based K or L x-ray fluorescence, or an equivalent method.

**Lead:** Lead includes metallic lead and inorganic and organic compounds of lead.

**Lead-based paint or lead paint:** Paint or other surface coating that contains lead equal to or greater than 1.0 mg/cm<sup>2</sup> or more than 0.5 percent by weight (5,000 µg/g, 5,000 ppm, or 5,000 mg/kg). (Local definitions may vary.)

**Lead-based paint hazard:** Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as identified by the Administrator pursuant to TSCA section 403.

**Lead-based paint hazard control:** Activities to control and eliminate lead-based paint hazards, including interim controls, abatement and complete abatement.

**Lead-contaminated dust or lead dust:** Surface dust in residential dwellings or child-occupied facilities that contain an area or mass concentration of dust in excess of the standard established by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. Until the EPA standards are set, the HUD- and EPA-recommended clearance and risk assessment standards for leaded dust are 100 µg/ft<sup>2</sup> on floors, 500 µg/ft<sup>2</sup> on interior window sills and 800 µg/ft<sup>2</sup> on window troughs.

**Lead-contaminated soil:** Bare soil on residential real property and on the property of a child-occupied facility that contains lead in excess of the standard published by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. The HUD-recommended standard and interim EPA guidance is 400 µg/g for high-contact play areas and 2,000 µg/g in other bare areas of the yard. EPA and HUD recommend that soil contaminated with lead at levels greater than or equal to 5,000 µg/g be abated by removal or paving.

**Lead-free dwelling:** A lead-free dwelling contains no lead-based paint and has interior dust and exterior soil lead levels below the applicable HUD and EPA standards.

**Lead-poisoned child:** A child with a single blood lead level that is greater than or equal to 20 µg/dl or consecutive blood lead levels greater than or equal to 15 µg/dl. Local definitions may vary.

**Multifamily housing:** Housing that contains more than one dwelling unit per location.

**NLLAP requirements:** Requirements, specified by the EPA National Lead Laboratory Accreditation Program, (NLLAP), for accreditation for the lead analysis of paint, soil, and dust matrixes by an EPA-recognized laboratory accreditation organization.

**Off-site paint removal:** The process of removing a component from a building and stripping the paint from the component at an off-site paint stripping facility.

**Protective sheeting:** Non-permeable, puncture resistant, disposable sheeting that is capable of completely containing lead-contaminated dust and debris or other waste and, after being properly sealed, should remain tight with no visible signs of discharge during movement or relocation.

**Renovation:** Work that involves construction and/or home or building improvement measures such as window replacement, weatherization, remodeling and repainting.

**Replacement:** Removal of building components (such as windows, doors and trim) and the installation of new components.

**Risk assessment:** (1) An onsite investigation to determine to existence, nature, severity, and location of lead-based paint hazards, and (2) the provision of a report by the individual or firm conducting the risk assessment.

**Risk assessor:** A certified individual who has completed training by an accredited training program as defined in 40 CFR Part 745 and certified by EPA pursuant to 40 CFR 745.226 to conduct risk assessments. A risk assessor also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

**Solid waste:** As defined by RCRA, the term *solid waste* means: garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; or other discarded materials, including solid, liquid, semi-solid or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations or from community activities. The term does not include solid or dissolved material in irrigation return flows or industrial discharges (which are point sources subject to permits under the Clean Water Act), nor does the term include special nuclear or by-product material as defined by the Atomic Energy Act of 1954.

**Spectrum analyzer:** A type of XRF analyzer that provides the operator with a plot of the energy and intensity, or counts of both K and L x-ray spectra, as well as a calculated lead concentration.

**Substrate:** A surface on which paint, varnish, or other coating has been applied or may be applied. Examples of substrates include wood, plaster, metal and drywall.

**Toxicity Characteristic Leaching Procedure (TCLP):** A laboratory test to determine if excessive levels of lead or other hazardous materials could leach from a sample into groundwater (usually used to determine if waste is hazardous based on its toxicity characteristics).

**Trained:** Successful completion of a training course in a particular discipline. For lead hazard control work, the training course must be accredited by EPA or by an EPA-approved State program, pursuant to Title IV of the Toxic Substances Control Act.

**Window trough:** For a typical double-hung window, the portion of the exterior window sill between the interior window sill (or stool) and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered (sometimes inaccurately called the window "well").

**Window well:** The space that provides exterior access and/or light to a window that is below grade (i.e., below the level of the surrounding earth or pavement).

**Work area:** The immediate area in which work occurs, typically the surrounding area and extending out at least four feet.

**XRF analyzer:** An instrument that determines lead concentration in milligrams per square centimeter ( $\text{mg}/\text{cm}^2$ ) using the principle of x-ray fluorescence (XRF). Two types of XRF analyzers are used – direct readers and spectrum analyzers. The term XRF analyzer only refers to portable instruments manufactured to analyze paint and does not refer to laboratory-grade units or portable instruments designed to analyze soil.

**$\mu\text{g}$ : Micrograms.** The prefix micro means 1/1,000,000 (or one-millionth). A microgram is 1/1,000,000 of a gram and 1/1,000 of a milligram, equal to about 35/1,000,000,000 (35 billionths) of an ounce (an ounce is equal to 28,400,000  $\mu\text{g}$ ).

## Instructions for Training Programs

### Applying for Accreditation of Lead-Based Paint Activity Training

---

You may apply to the U.S. Environmental Protection Agency (EPA) for accreditation of a lead-based paint activities initial course(s), refresher course(s), or both in any or all of the following disciplines: **Inspector, Risk Assessor, Supervisor, Project Designer, or Abatement Worker**. The four sections of this booklet will guide you through the *Accreditation Application for Training Programs*, help you demonstrate your relevant qualifications, assist with selecting the supporting materials for your application, and tell you what to expect after you have submitted your application.

EPA can accredit your training program in States, Tribal Lands, and U.S. Territories where EPA implements the lead-based paint certification program. In your application, you will need to specify each area or region in which you plan to conduct training and pay the appropriate fee as listed on the **FEE SHEET** which was included with your application form. You can be accredited only in the areas or regions that you list in your application. If EPA does not administer the lead-based paint program in an area or region where you wish to conduct training, you will need to apply directly to that State, Tribal Land, or U.S. Territory for accreditation. You can call 1-800-424-LEAD to find out whether you should apply to EPA for accreditation.

You may submit your application any time after August 31, 1998. After March 1, 1999, only accredited training programs will be able to offer courses to individuals who wish to be certified to conduct lead-based paint activities in target housing or child-occupied facilities.

If you would like more information on EPA and other lead programs or if you have questions about the application process that are not answered in this booklet, see the web site: <http://www.epa.gov/lead>, call the application assistance Help Line at 1-800-424-LEAD, or see the applicable portion of 40 *Code of Federal Regulations* §745.225 (40 CFR §745.225), which are re-printed beginning on Page 15 of this booklet.

### The Application Form

You should use the *Accreditation Application for Training Programs* to apply for initial accreditation, renewal of accreditation, or replacement of a lost certificate. While much of the form is easy to understand, using these instructions will help you fill out some of the sections and avoid mistakes that could delay EPA's review of your application.

If you are applying for accreditation of more than one course, you may need to submit different information for each course in some sections of the application form. Please photocopy pages of the application form as necessary to give yourself enough space to clearly associate each accreditation and/or re-accreditation request with the correct course, and to include all the information needed for all the training courses and/or refresher courses you plan to offer. Do not list the same information more than once; instead, clearly indicate the courses to which that information is referring.

When applying for accreditation or re-accreditation of more than one course, submit the appropriate fees for ALL the courses with your application package. The amount you must pay also depends on the number of different areas or regions in which you wish to conduct training. The appropriate fees are specified in the **FEE SHEET** which was included with your application form.

Applying for Initial Accreditation

A. Course(s) to be Accredited or Re-Accredited

When applying for initial accreditation, check the box next to Application for Initial Accreditation (shown here). Also, check Initial and/or Refresher under the appropriate discipline heading(s) to indicate the initial or refresher course(s) for which you are applying for accreditation. You may apply for and receive accreditation for initial and/or refresher courses in more than one discipline at the same time, as long as you

<b>A. Course(s) to be Accredited or Re-Accredited</b>				
Select at least one of the following, as appropriate. Also select from the disciplines listed below.				
<input type="checkbox"/> Application for Initial Accreditation <input type="checkbox"/> Renewal of Accreditation <input type="checkbox"/> Replacement of a lost certificate				
Check as many boxes as necessary to indicate the discipline for which training course accreditation or re-accreditation is sought:				
<b>Inspector</b>	<b>Risk Assessor</b>	<b>Abatement Worker</b>	<b>Supervisor</b>	<b>Project Designer</b>
<input type="checkbox"/> Initial	<input type="checkbox"/> Initial	<input type="checkbox"/> Initial	<input type="checkbox"/> Initial	<input type="checkbox"/> Initial
<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher

provide complete information in your application package for each course.

B. Applicant Information

In this section, depicted below, please name your training program. In the blank for applicant name, identify the business, State, other government, or other organization that plans to offer the training. Name the training program again if it is the applicant. The applicant's address is required and must not be a post office box. Also list another mailing address if the training program receives its mail elsewhere.

Please list all the locations where training will occur. Include the location listed as the business address if it is a training location. Do not use any post office box addresses and attach an additional sheet if you need more space. If you plan to conduct training in more than one area or region, be sure to include the appropriate fee(s) as specified on the **FEE SHEET**.

<b>B. Applicant Information</b>				
Name of Training Program: _____				
Applicant's Name: _____				
Business, State, Government, etc. _____				
Street Address, Suite No. _____		City _____	State _____	Zip Code _____
Mailing Address: _____				
(if different from above) Address _____ City _____ State _____ Zip Code _____				
Applicant's Phone #: (____) ____-____ ext. ____ Applicant's Fax #: (____) ____-____				
Applicant's E-mail Address: _____				
Do you request a fee waiver as a: <input type="checkbox"/> Local government applicant <input type="checkbox"/> State government applicant				
<input type="checkbox"/> Nonprofit applicant: 501(c)(3) IRS-issued number: _____				
If your training program designation is nonprofit, specify the 501(c)(3) IRS issued number above and submit a copy of an official IRS letter confirming such designation.				
Please list all locations at which training will take place. Attach additional sheets of paper if necessary.				
Street Address, Suite No. (Please, no P O Box) _____		City _____	State _____	Zip Code _____

### C. Qualifications of Training Program Manager

This section asks for information about the experience, education, and training of the training program manager. Attach additional sheets if you need more space. The application form, Page 10 of these instructions, and 40 CFR §745.225(c)(1) identify specific requirements for the training program manager. Please document the qualifications of your training program manager. If you do not provide this material, EPA's evaluation of your application will be delayed.

### D. Qualifications of Principal Course Instructor

This section requests information about the experience, education, and training of the principal course instructor. Attach additional sheets if you need more space. The application form, Page 11 of these instructions, and 40 CFR §745.225(c)(2) identify specific requirements for the principal course instructor. As with the qualifications of the training program manager, please document the qualifications of your principal course instructor. If you do not provide this material, EPA's evaluation of your application will be delayed.

### E. Other Qualifications

Fill in this section with information about previous accreditation(s) or approval(s) that your training program has received. If your training program holds permits, licenses, certifications, or registrations in the lead-based paint activity field, describe those certifications in the blanks provided. Attach an additional sheet if you need more space.

### F. Areas/Regions

In this section, list the States, U. S. Territories, and/or Tribal Lands in which you plan to offer lead-based paint activity training course(s) and/or refresher course(s). See the **FEE SHEET** for the appropriate fee if you intend to offer training in more than one area or region. If you plan to offer courses in any Tribal area, please provide the full name and mailing address of the Tribe(s).

### G. Training Course Material

Please indicate whether you plan to use EPA-recommended model training materials or EPA-authorized State, Territory, or Indian Tribe approved training materials. If not, include with your application copies of the training materials that you plan to use. See the section entitled Requirements for the Training Program, beginning on Page 9 of these instructions, for more information about this requirement.

### H. Additional Information

Please use the space provided in this section to provide any additional, relevant information or comments that you believe EPA should consider with your application. Attach additional sheets if you need more space.

### I. Certification Statement

You must read and agree with the certification statement. Also, read the Privacy Act Statement and the subsequent statement, and sign and date the application.

The checklist that follows your signature will help you make sure your application package is complete. In particular, be sure to sign and date the application form, and enclose the appropriate application fee(s). See the **FEE SHEET**, included with your application form.

Applying for Renewal of Accreditation

Initial and refresher training course accreditations expire after four years. To renew accreditation, you must submit your application for renewal no later than 180 days before the accreditation expires. Otherwise, EPA cannot guarantee that your training program will be re-accredited before your current accreditation expires.

To renew accreditation, use the *Accreditation Application for Training Programs*. Complete Sections **A. Course to be Accredited or Re-Accredited**, **B. Applicant Information**, and **I. Certification Statement**. You must describe any changes to the training facility, equipment, or course materials since the training program's last approved application for accreditation or re-accreditation that may adversely affect the students ability to learn. You also may use the opportunity to update information in any other section.

<b>A. Course(s) to be Accredited or Re-Accredited</b>				
Select at least one of the following, as appropriate. Also select from the disciplines listed below.				
<input type="checkbox"/> Application for Initial Accreditation				
<input type="checkbox"/> Renewal of Accreditation				
<input type="checkbox"/> Replacement of a lost certificate				
Check as many boxes as necessary to indicate the discipline for which training course accreditation or re-accreditation is sought:				
<b>Inspector</b>	<b>Risk Assessor</b>	<b>Abatement Worker</b>	<b>Supervisor</b>	<b>Project Designer</b>
<input type="checkbox"/> Initial	<input type="checkbox"/> Initial	<input type="checkbox"/> Initial	<input type="checkbox"/> Initial	<input type="checkbox"/> Initial
<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher	<input type="checkbox"/> Refresher

**A. Course to be Accredited or Re-Accredited**

When applying to renew accreditation, check the box next to **Renewal of Accreditation** (shown on the next page). Also, check **Initial** and/or **Refresher** under the appropriate discipline heading(s) to indicate the initial or refresher course(s) for which you are applying for re-accreditation. You may apply for and receive renewal of accreditation for initial and/or refresher courses in more than one discipline at the same time, as long as you provide complete information in your application package for each course.

## INSTRUCTIONS FOR LEAD-BASED PAINT ACTIVITY TRAINING PROGRAMS (CONTINUED)

## B. Applicant Information

In this section, depicted below, please name your training program. In the blank for applicant name, name the business, State, other government, or other organization that plans to offer the training. Name the training program again if it is the applicant. The applicant's address is required and must not be a post office box. Also list another mailing address if the training program receives its mail elsewhere.

<b>B. Applicant Information</b>			
Name of Training Program: _____			
Applicant's Name: _____			
Business, State, Government, etc			
Street Address, Suite No	City	State	Zip Code
Mailing Address: _____			
(if different from above)	Address	City	State Zip Code
Applicant's Phone #: ( ) - - ext. Applicant's Fax #: ( ) - -			
Applicant's E-mail Address: _____			
Do you request a fee waiver as a: <input type="checkbox"/> Local government applicant <input type="checkbox"/> State government applicant			
<input type="checkbox"/> Nonprofit applicant: 501(c)(3) IRS-issued number: _____			
If your training program designation is nonprofit, specify the 501(c)(3) IRS issued number above and submit a copy of an official IRS letter confirming such designation.			
Please list all locations at which training will take place. Attach additional sheets of paper if necessary.			
Street Address, Suite No (Please, no P O Box)	City	State	Zip Code

Please list all the locations where training will occur. Include the location listed as the business address if it is a training location. Please do not use any post office box addresses and attach an additional sheet if you need more space. If you conduct training in more than one area or region, be sure to include the appropriate fee(s) as specified on the **FEE SHEET**.

When applying for renewal of accreditation, send the appropriate fee, listed on the **FEE SHEET** which was included with your application form, to EPA. EPA's address is printed on the application form.

Replacement of a Lost Certificate

You need to fill out a new application form to replace a lost certificate of approval. Complete only sections **A. Course to be Accredited or Re-Accredited**, **B. Applicant Information** and **I. Certification Statement** of the *Accreditation Application for Training Programs*. Sign and date the application, and submit it with the appropriate fee as specified on the Fee Sheet which was included with your application form. EPA's address is printed on the application form.

## Qualifications and Supporting Materials

### Requirements for the Training Program

With your completed application, you must submit the following for accreditation of an initial and/or refresher course(s):

- A description of the facilities and equipment to be used for lecture and hands-on training;
- A copy of the course test blueprint;
- A description of the activities and procedures that will be used for assessing hands-on skills; and
- A copy of the quality control plan, described in 40 CFR §745.225 (c)(9), which will be used to maintain and improve the quality of the training program over time. It must include:
  - Procedures for periodic revision of training materials and the course test to reflect innovations in the field; and
  - Procedures for the training manager's annual review of principal instructor competency.

If your training program does not plan to use EPA-recommended model training materials or training materials approved by an EPA-authorized State or Tribe, you must submit copies of your training materials. This must include a copy of:

- The student and instructor manuals or other materials to be used; and
- The course agenda.

The training program also must employ a training manager and a principal course instructor who must meet certain experience, education, and/or training requirements, detailed below.

### Requirements for the Training Manager

A training program must employ a training manager who meets criteria outlined below. EPA's review of your application will be delayed until you submit evidence that these criteria are met. Suggestions of ways to document a training manager's qualifications begin on the next page.

A training manager must have:

- Demonstrated experience, education, or training in the construction industry such as: lead or asbestos abatement, painting, carpentry, renovation, remodeling, occupational safety and health, or industrial hygiene; and
- All the qualifications in one of the following:
  - At least two years of experience, education, or training in teaching workers or adults; or
  - A bachelor's or graduate degree in building construction technology, engineering, industrial hygiene, safety, public health, education, business administration or program management, or a related field; or
  - Two years of experience in managing a training program specializing in environmental hazards.

### Requirements for the Principal Course Instructor

A training program must employ a principal course instructor who meets the criteria outlined below. EPA's review of your application will be delayed until you submit evidence that these criteria are met. Suggestions of ways to document a principal course instructor's qualifications appear in the next section.

A principal course instructor must have:

- Demonstrated experience, education, or training in teaching workers or adults; and
- Successful completion of at least 16 hours of any EPA-accredited or EPA-authorized State or Tribal-accredited lead-specific training; and
- Demonstrated experience, education, or training in lead or asbestos abatement, painting, carpentry, renovation, remodeling, occupational safety and health, or industrial hygiene.

### **Demonstrating Qualifications**

To demonstrate training manager and principal course instructor qualifications, EPA suggests that you submit documents from the following list, as appropriate.

#### Education Requirements

Education qualifications can be demonstrated with a copy of an official high school diploma or an official transcript from a college or other institution of higher learning.

#### Experience Requirements

Resume(s), letters of reference, or other documentation of work experience can prove that the training manager or principal course instructor have certain experience. Other documentation of work experience could include, for example, a copy of a commendation letter or Certificate of Apprenticeship.

#### Training Requirements

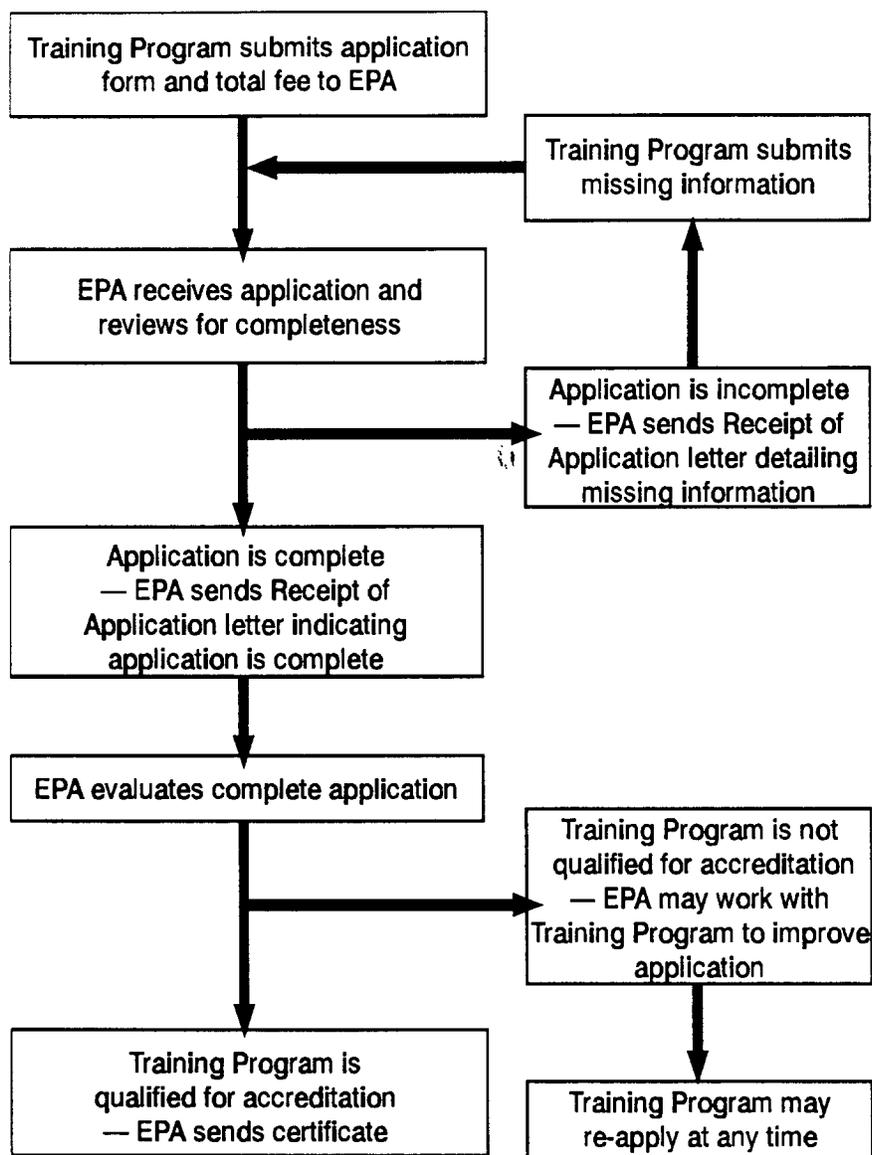
A copy of valid course completion certificate(s) issued by accredited training program(s) will demonstrate training qualifications. A copy or copies of certificate(s) from train-the-trainer courses also may be appropriate.

## The Accreditation Process

As shown in the flow chart on the next page, EPA will send you a notice that your application has been received and is either complete or incomplete. If it is incomplete, the notice will list the missing information that must be submitted before EPA can consider the application.

EPA will decide whether to approve an application for accreditation within 180 days of receiving a complete application. If approved, a certificate of accreditation will be sent to the training program. If disapproved, EPA will send a letter describing the reasons for its decision. EPA may decide to work with such programs to improve their application for accreditation or to request additional materials. A disapproved training program may reapply for accreditation at any time.

The Accreditation Process



**Paperwork Reduction Act Notice:** The annual public burden for this collection of information is estimated to be 27.6 hours per accreditation response, and 4.8 hours per re-accreditation response, including the time needed for reading the instructions and completing the necessary information contained in this form. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Regulatory Information Division, U.S. Environmental Protection Agency (Mail Code 2137), 401 M Street, S.W., Washington, DC 20460. Include OMB No. 2070-0155 in any correspondence. Do not send the completed form or requested information to this address. The actual information or form should be submitted in accordance with the instructions accompanying the form, or as specified in the corresponding regulations.

---

 INSTRUCTIONS FOR LEAD-BASED PAINT ACTIVITY TRAINING PROGRAMS (CONTINUED)
 

---

40 CFR Part 745

Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities

**§ 745.225 Accreditation of training programs: target housing and child-occupied facilities.**

(a) Scope. (1) A training program may seek accreditation to offer lead-based paint activities courses in any of the following disciplines: inspector, risk assessor, supervisor, project designer, and abatement worker. A training program may also seek accreditation to offer refresher courses for each of the above listed disciplines.

(2) Training programs may first apply to EPA for accreditation of their lead-based paint activities courses or refresher courses pursuant to this section on or after August 31, 1998.

(3) A training program shall not provide, offer, or claim to provide EPA-accredited lead-based paint activities courses without applying for and receiving accreditation from EPA as required under paragraph (b) of this section on or after March 1, 1999.

(b) Application process. The following are procedures a training program shall follow to receive EPA accreditation to offer lead-based paint activities courses:

(1) A training program seeking accreditation shall submit a written application to EPA containing the following information:

(i) The training program's name, address, and telephone number.

(ii) A list of courses for which it is applying for accreditation.

(iii) A statement signed by the training program manager certifying that the training program meets the requirements established in paragraph (c) of this section. If a training program uses EPA-recommended model training materials, or training materials approved by a State or Indian Tribe that has been authorized by EPA under subpart Q of this part, the training program manager shall include a statement certifying that, as well.

(iv) If a training program does not use EPA-recommended model training materials or training materials approved by an authorized State or Indian Tribe, its application for accreditation shall also include:

(A) A copy of the student and instructor manuals, or other materials to be used for each course.

(B) A copy of the course agenda for each course.

(v) All training programs shall include in their application for accreditation the following:

(A) A description of the facilities and equipment to be used for lecture and hands-on training.

(B) A copy of the course test blueprint for each course.

(C) A description of the activities and procedures that will be used for conducting the assessment of hands-on skills for each course.

(D) A copy of the quality control plan as described in paragraph (c)(9) of this section.

(2) If a training program meets the requirements in paragraph (c) of this section, then EPA shall approve the application for accreditation no more than 180 days after receiving a complete application from the training program.

In the case of approval, a certificate of accreditation shall be sent to the applicant. In the case of disapproval, a letter describing the reasons for disapproval shall be sent to the applicant. Prior to disapproval, EPA may, at its discretion, work with the applicant to address inadequacies in the application for accreditation. EPA may also request additional materials retained by the training program under paragraph (i) of this section. If a training program's application is disapproved, the program may reapply for accreditation at any time.

(3) A training program may apply for accreditation to offer courses or refresher courses in as many disciplines as it chooses. A training program may seek accreditation for additional courses at any time as long as the program can demonstrate that it meets the requirements of this section.

(c) Requirements for the accreditation of training programs. For a training program to obtain accreditation from EPA to offer lead-based paint activities courses, the program shall meet the following requirements:

(1) The training program shall employ a training manager who has:

(i) At least 2 years of experience, education, or training in teaching workers or adults; or

(ii) A bachelor's or graduate degree in building construction technology, engineering, industrial hygiene, safety, public health, education, business administration or program management or a related field; or

(iii) Two years of experience in managing a training program specializing in environmental hazards; and

(iv) Demonstrated experience, education, or training in the construction industry including: lead or asbestos abatement, painting, carpentry, renovation, remodeling, occupational safety and health, or industrial hygiene.

(2) The training manager shall designate a qualified principal instructor for each course who has:

(i) Demonstrated experience, education, or training in teaching workers or adults; and

(ii) Successfully completed at least 16 hours of any EPA-accredited or EPA-authorized State or Tribal-accredited lead-specific training; and

(iii) Demonstrated experience, education, or training in lead or asbestos abatement, painting, carpentry, renovation, remodeling, occupational safety and health, or industrial hygiene.

(3) The principal instructor shall be responsible for the organization of the course and oversight of the teaching of all course material. The training manager may designate guest instructors as needed to provide instruction specific to the lecture, hands-on activities, or work practice components of a course.

(4) The following documents shall be recognized by EPA as evidence that training managers and principal instructors have the education, work experience, training requirements or demonstrated experience, specifically listed in paragraphs (c)(1) and (c)(2) of this section. This documentation need not be submitted with the accreditation application, but, if not submitted, shall be retained by the training program as required by the recordkeeping requirements contained in paragraph (i) of this section. Those documents include the following:

(i) Official academic transcripts or diploma as evidence of meeting the education requirements.

(ii) Resumes, letters of reference, or documentation of work experience, as evidence of meeting the work experience requirements.

(iii) Certificates from train-the-trainer courses and lead-specific training courses, as evidence of meeting the training requirements.

(5) The training program shall ensure the availability of, and provide adequate facilities for, the delivery of the lecture, course test, hands-on training, and assessment activities. This includes providing training equipment that reflects current work practices and maintaining or updating the equipment and facilities as needed.

(6) To become accredited in the following disciplines, the training program shall provide training courses that meet the following training hour requirements:

(i) The inspector course shall last a minimum of 24 training hours, with a minimum of 8 hours devoted to hands-on training activities. The minimum curriculum requirements for the inspector course are contained in paragraph (d)(1) of this section.

INSTRUCTIONS FOR LEAD-BASED PAINT ACTIVITY TRAINING PROGRAMS (CONTINUED)

- (ii) The risk assessor course shall last a minimum of 16 training hours, with a minimum of 4 hours devoted to hands-on training activities. The minimum curriculum requirements for the risk assessor course are contained in paragraph (d)(2) of this section.
- (iii) The supervisor course shall last a minimum of 32 training hours, with a minimum of 8 hours devoted to hands-on activities. The minimum curriculum requirements for the supervisor course are contained in paragraph (d)(3) of this section.
- (iv) The project designer course shall last a minimum of 8 training hours. The minimum curriculum requirements for the project designer course are contained in paragraph (d)(4) of this section.
- (v) The abatement worker course shall last a minimum of 16 training hours, with a minimum of 8 hours devoted to hands-on training activities. The minimum curriculum requirements for the abatement worker course are contained in paragraph (d)(5) of this section.
- (7) For each course offered, the training program shall conduct either a course test at the completion of the course, and if applicable, a hands-on skills assessment, or in the alternative, a proficiency test for that discipline.
- Each individual must successfully complete the hands-on skills assessment and receive a passing score on the course test to pass any course, or successfully complete a proficiency test.
- (i) The training manager is responsible for maintaining the validity and integrity of the hands-on skills assessment or proficiency test to ensure that it accurately evaluates the trainees' performance of the work practices and procedures associated with the course topics contained in paragraph (d) of this section.
- (ii) The training manager is responsible for maintaining the validity and integrity of the course test to ensure that it accurately evaluates the trainees' knowledge and retention of the course topics.
- (iii) The course test shall be developed in accordance with the test blueprint submitted with the training accreditation application.
- (8) The training program shall issue unique course completion certificates to each individual who passes the training course. The course completion certificate shall include:
- (i) The name, a unique identification number, and address of the individual.
- (ii) The name of the particular course that the individual completed.
- (iii) Dates of course completion/test passage.
- (iv) Expiration date of interim certification, which shall be 6 months from the date of course completion.
- (v) The name, address, and telephone number of the training program.
- (9) The training manager shall develop and implement a quality control plan. The plan shall be used to maintain and improve the quality of the training program over time. This plan shall contain at least the following elements:
- (i) Procedures for periodic revision of training materials and the course test to reflect innovations in the field.
- (ii) Procedures for the training manager's annual review of principal instructor competency.
- (10) The training program shall offer courses which teach the work practice standards for conducting lead-based paint activities contained in § 745.227, and other standards developed by EPA pursuant to Title IV of TSCA. These standards shall be taught in the appropriate courses to provide trainees with the knowledge needed to perform the lead-based paint activities they are responsible for conducting.
- (11) The training manager shall be responsible for ensuring that the training program complies at all times with all of the requirements in this section.
- (12) The training manager shall allow EPA to audit the training program to verify the contents of the application for accreditation as described in paragraph (b) of this section.
- (d) Minimum training curriculum requirements. To become accredited to offer lead-based paint courses instruction in the specific disciplines listed below, training programs must ensure that their courses of study include, at a minimum, the following course topics. Requirements ending in an asterisk (\*) indicate areas that require hands-on activities as an integral component of the course.
- (1) Inspector. (i) Role and responsibilities of an inspector.
- (ii) Background information on lead and its adverse health effects.
- (iii) Background information on Federal, State, and local regulations and guidance that pertains to lead-based paint and lead-based paint activities.
- (iv) Lead-based paint inspection methods, including selection of rooms and components for sampling or testing.\*
- (v) Paint, dust, and soil sampling methodologies.\*
- (vi) Clearance standards and testing, including random sampling.\*
- (vii) Preparation of the final inspection report.\*
- (viii) Recordkeeping.
- (2) Risk assessor. (i) Role and responsibilities of a risk assessor.
- (ii) Collection of background information to perform a risk assessment.
- (iii) Sources of environmental lead contamination such as paint, surface dust and soil, water, air, packaging, and food.
- (iv) Visual inspection for the purposes of identifying potential sources of lead-based paint hazards.\*
- (v) Lead hazard screen protocol.
- (vi) Sampling for other sources of lead exposure.\*
- (vii) Interpretation of lead-based paint and other lead sampling results, including all applicable State or Federal guidance or regulations pertaining to lead-based paint hazards.\*
- (viii) Development of hazard control options, the role of interim controls, and operations and maintenance activities to reduce lead-based paint hazards.
- (ix) Preparation of a final risk assessment report.
- (3) Supervisor. (i) Role and responsibilities of a supervisor.
- (ii) Background information on lead and its adverse health effects.
- (iii) Background information on Federal, State, and local regulations and guidance that pertain to lead-based paint abatement.
- (iv) Liability and insurance issues relating to lead-based paint abatement.
- (v) Risk assessment and inspection report interpretation.\*
- (vi) Development and implementation of an occupant protection plan and abatement report.
- (vii) Lead-based paint hazard recognition and control.\*
- (viii) Lead-based paint abatement and lead-based paint hazard reduction methods, including restricted practices.\*
- (ix) Interior dust abatement/cleanup or lead-based paint hazard control and reduction methods.\*
- (x) Soil and exterior dust abatement or lead-based paint hazard control and reduction methods.\*
- (xi) Clearance standards and testing.

INSTRUCTIONS FOR LEAD-BASED PAINT ACTIVITY TRAINING PROGRAMS (CONTINUED)

- (xii) Cleanup and waste disposal.
- (xiii) Recordkeeping.
- (4) Project designer. (i) Role and responsibilities of a project designer.
- (ii) Development and implementation of an occupant protection plan for large scale abatement projects.
- (iii) Lead-based paint abatement and lead-based paint hazard reduction methods, including restricted practices for large-scale abatement projects.
- (iv) Interior dust abatement/cleanup or lead hazard control and reduction methods for large-scale abatement projects.
- (v) Clearance standards and testing for large scale abatement projects.
- (vi) Integration of lead-based paint abatement methods with modernization and rehabilitation projects for large scale abatement projects.
- (5) Abatement worker. (i) Role and responsibilities of an abatement worker.
- (ii) Background information on lead and its adverse health effects.
- (iii) Background information on Federal, State and local regulations and guidance that pertain to lead-based paint abatement.
- (iv) Lead-based paint hazard recognition and control.\*
- (v) Lead-based paint abatement and lead-based paint hazard reduction methods, including restricted practices.\*
- (vi) Interior dust abatement methods/cleanup or lead-based paint hazard reduction.\*
- (vii) Soil and exterior dust abatement methods or lead-based paint hazard reduction.\*
- (e) Requirements for the accreditation of refresher training programs. A training program may seek accreditation to offer refresher training courses in any of the following disciplines: inspector, risk assessor, supervisor, project designer, and abatement worker. To obtain EPA accreditation to offer refresher training, a training program must meet the following minimum requirements:
  - (1) Each refresher course shall review the curriculum topics of the full-length courses listed under paragraph (d) of this section, as appropriate. In addition, to become accredited to offer refresher training courses, training programs shall ensure that their courses of study include, at a minimum, the following:
    - (i) An overview of current safety practices relating to lead-based paint activities in general, as well as specific information pertaining to the appropriate discipline.
    - (ii) Current laws and regulations relating to lead-based paint activities in general, as well as specific information pertaining to the appropriate discipline.
    - (iii) Current technologies relating to lead-based paint activities in general, as well as specific information pertaining to the appropriate discipline.
  - (2) Each refresher course, except for the project designer course, shall last a minimum of 8 training hours. The project designer refresher course shall last a minimum of 4 training hours.
  - (3) For each course offered, the training program shall conduct a hands-on assessment (if applicable), and at the completion of the course, a course test.
  - (4) A training program may apply for accreditation of a refresher course concurrently with its application for accreditation of the corresponding training course as described in paragraph (b) of this section. If so, EPA shall use the approval procedure described in paragraph (b) of this section. In addition, the minimum requirements contained in paragraphs (c) (except for the requirements in paragraph (c)(6)), and (e)(1), (e)(2) and (e)(3) of this section shall also apply.
  - (5) A training program seeking accreditation to offer refresher training courses only shall submit a written application to EPA containing the following information:
    - (i) The refresher training program's name, address, and telephone number.
    - (ii) A list of courses for which it is applying for accreditation.
    - (iii) A statement signed by the training program manager certifying that the refresher training program meets the minimum requirements established in paragraph (c) of this section, except for the requirements in paragraph (c)(6) of this section. If a training program uses EPA-developed model training materials, or training materials approved by a State or Indian Tribe that has been authorized by EPA under § 745.324 to develop its refresher training course materials, the training manager shall include a statement certifying that, as well.
    - (iv) If the refresher training course materials are not based on EPA-developed model training materials or training materials approved by an authorized State or Indian Tribe, the training program's application for accreditation shall include:
      - (A) A copy of the student and instructor manuals to be used for each course.
      - (B) A copy of the course agenda for each course.
    - (v) All refresher training programs shall include in their application for accreditation the following:
      - (A) A description of the facilities and equipment to be used for lecture and hands-on training.
      - (B) A copy of the course test blueprint for each course.
      - (C) A description of the activities and procedures that will be used for conducting the assessment of hands-on skills for each course (if applicable).
      - (D) A copy of the quality control plan as described in paragraph (c)(9) of this section.
    - (vi) The requirements in paragraphs (c)(1) through (c)(5), and (c)(7) through (c)(12) of this section apply to refresher training providers.
    - (vii) If a refresher training program meets the requirements listed in this paragraph, then EPA shall approve the application for accreditation no more than 180 days after receiving a complete application from the refresher training program. In the case of approval, a certificate of accreditation shall be sent to the applicant. In the case of disapproval, a letter describing the reasons for disapproval shall be sent to the applicant. Prior to disapproval, EPA may, at its discretion, work with the applicant to address inadequacies in the application for accreditation. EPA may also request additional materials retained by the refresher training program under paragraph (i) of this section. If a refresher training program's application is disapproved, the program may reapply for accreditation at any time.
  - (f) Re-accreditation of training programs. (1) Unless re-accredited, a training program's accreditation (including refresher training accreditation) shall expire 4 years after the date of issuance. If a training program meets the requirements of this section, the training program shall be re-accredited.
    - (2) A training program seeking re-accreditation shall submit an application to EPA no later than 180 days before its accreditation expires. If a training program does not submit its application for re-accreditation by that date, EPA cannot guarantee that the program will be re-accredited before the end of the accreditation period.
    - (3) The training program's application for re-accreditation shall contain:
      - (i) The training program's name, address, and telephone number.
      - (ii) A list of courses for which it is applying for re-accreditation.
      - (iii) A description of any changes to the training facility, equipment or course materials since its last application was approved that adversely affects the students ability to learn.

## INSTRUCTIONS FOR LEAD-BASED PAINT ACTIVITY TRAINING PROGRAMS (CONTINUED)

- (iv) A statement signed by the program manager stating:
- (A) That the training program complies at all times with all requirements in paragraphs (c) and (e) of this section, as applicable; and
- (B) The recordkeeping and reporting requirements of paragraph (i) of this section shall be followed.
- (4) Upon request, the training program shall allow EPA to audit the training program to verify the contents of the application for re-accreditation as described in paragraph (f)(3) of this section.
- (g) Suspension, revocation, and modification of accredited training programs. (1) EPA may, after notice and an opportunity for hearing, suspend, revoke, or modify training program accreditation (including refresher training accreditation) if a training program, training manager, or other person with supervisory authority over the training program has:
- (i) Misrepresented the contents of a training course to EPA and/or the student population.
  - (ii) Failed to submit required information or notifications in a timely manner.
  - (iii) Failed to maintain required records.
  - (iv) Falsified accreditation records, instructor qualifications, or other accreditation-related information or documentation.
  - (v) Failed to comply with the training standards and requirements in this section.
  - (vi) Failed to comply with Federal, State, or local lead-based paint statutes or regulations.
  - (vii) Made false or misleading statements to EPA in its application for accreditation or re-accreditation which EPA relied upon in approving the application.
- (2) In addition to an administrative or judicial finding of violation, execution of a consent agreement in settlement of an enforcement action constitutes, for purposes of this section, evidence of a failure to comply with relevant statutes or regulations.
- (h) Procedures for suspension, revocation or modification of training program accreditation. (1) Prior to taking action to suspend, revoke, or modify the accreditation of a training program, EPA shall notify the affected entity in writing of the following:
- (i) The legal and factual basis for the suspension, revocation, or modification.
  - (ii) The anticipated commencement date and duration of the suspension, revocation, or modification.
  - (iii) Actions, if any, which the affected entity may take to avoid suspension, revocation, or modification, or to receive accreditation in the future.
  - (iv) The opportunity and method for requesting a hearing prior to final EPA action to suspend, revoke or modify accreditation.
  - (v) Any additional information, as appropriate, which EPA may provide.
- (2) If a hearing is requested by the accredited training program, EPA shall:
- (i) Provide the affected entity an opportunity to offer written statements in response to EPA's assertions of the legal and factual basis for its proposed action, and any other explanations, comments, and arguments it deems relevant to the proposed action.
  - (ii) Provide the affected entity such other procedural opportunities as EPA may deem appropriate to ensure a fair and impartial hearing.
  - (iii) Appoint an official of EPA as Presiding Officer to conduct the hearing. No person shall serve as Presiding Officer if he or she has had any prior connection with the specific matter.
- (3) The Presiding Officer appointed pursuant to paragraph (h)(2) of this section shall:
- (i) Conduct a fair, orderly, and impartial hearing within 90 days of the request for a hearing.
  - (ii) Consider all relevant evidence, explanation, comment, and argument submitted.
  - (iii) Notify the affected entity in writing within 90 days of completion of the hearing of his or her decision and order. Such an order is a final agency action which may be subject to judicial review.
- (4) If EPA determines that the public health, interest, or welfare warrants immediate action to suspend the accreditation of any training program prior to the opportunity for a hearing, it shall:
- (i) Notify the affected entity of its intent to immediately suspend training program accreditation for the reasons listed in paragraph (g)(1) of this section. If a suspension, revocation, or modification notice has not previously been issued pursuant to paragraph (g)(1) of this section, it shall be issued at the same time the emergency suspension notice is issued.
  - (ii) Notify the affected entity in writing of the grounds for the immediate suspension and why it is necessary to suspend the entity's accreditation before an opportunity for a suspension, revocation or modification hearing.
  - (iii) Notify the affected entity of the anticipated commencement date and duration of the immediate suspension.
  - (iv) Notify the affected entity of its right to request a hearing on the immediate suspension within 15 days of the suspension taking place and the procedures for the conduct of such a hearing.
- (5) Any notice, decision, or order issued by EPA under this section, any transcripts or other verbatim record of oral testimony, and any documents filed by an accredited training program in a hearing under this section shall be available to the public, except as otherwise provided by section 14 of TSCA or by part 2 of this title. Any such hearing at which oral testimony is presented shall be open to the public, except that the Presiding Officer may exclude the public to the extent necessary to allow presentation of information which may be entitled to confidential treatment under section 14 of TSCA or part 2 of this title.
- (6) The public shall be notified of the suspension, revocation, modification or reinstatement of a training program's accreditation through appropriate mechanisms.
- (7) EPA shall maintain a list of parties whose accreditation has been suspended, revoked, modified or reinstated.
- (i) Training program recordkeeping requirements. (1) Accredited training programs shall maintain, and make available to EPA, upon request, the following records:
- (i) All documents specified in paragraph (c)(4) of this section that demonstrate the qualifications listed in paragraphs (c)(1) and (c)(2) of this section of the training manager and principal instructors.
  - (ii) Current curriculum/course materials and documents reflecting any changes made to these materials.
  - (iii) The course test blueprint.
  - (iv) Information regarding how the hands-on assessment is conducted including, but not limited to:
    - (A) Who conducts the assessment.
    - (B) How the skills are graded.
    - (C) What facilities are used.
    - (D) The pass/fail rate.
  - (v) The quality control plan as described in paragraph (c)(9) of this section.
  - (vi) Results of the students' hands-on skills assessments and course tests, and a record of each student's course completion certificate.

INSTRUCTIONS FOR LEAD-BASED PAINT ACTIVITY TRAINING PROGRAMS (CONTINUED)

---

- (vii) Any other material not listed above in paragraphs (i)(1)(i) through (i)(1)(vi) of this section that was submitted to EPA as part of the program's application for accreditation.
- (2) The training program shall retain these records at the address specified on the training program accreditation application (or as modified in accordance with paragraph (i)(3) of this section for a minimum of 3 years and 6 months.
- (3) The training program shall notify EPA in writing within 30 days of changing the address specified on its training program accreditation application or transferring the records from that address.



U. S. ENVIRONMENTAL PROTECTION AGENCY

ACCREDITATION APPLICATION FOR TRAINING PROGRAMS

Important: Consult the Instructions for Training Programs and the official requirements reprinted there to complete this form. Please type or print responses in black or blue ink only.

A. Course(s) to be Accredited or Re-Accredited

Official Use Only

Select at least one of the following, as appropriate. Also select from the disciplines listed below.

- Application for Initial Accreditation
Renewal of Accreditation
Replacement of a lost certificate

For information on EPA and other lead programs, see the web site: http://www.epa.gov/lead/

Check as many boxes as necessary to indicate the course(s) for which training course accreditation or re-accreditation is sought:

- Inspector: Initial, Refresher
Risk Assessor: Initial, Refresher
Abatement Worker: Initial, Refresher
Supervisor: Initial, Refresher
Project Designer: Initial, Refresher

B. Applicant Information

Name of Training Program:

Applicant's Name: Business, State, Government, etc.

Street Address, Suite No. City State Zip Code

Mailing Address: (if different from above) Address City State Zip Code

Applicant's Phone #: ext. Applicant's Fax #: ext.

Applicant's E-mail Address:

Do you request a fee waiver as a: Local government applicant, State government applicant, Nonprofit applicant: 501(c)(3) IRS-issued number:

If your training program designation is nonprofit, specify the 501(c)(3) IRS issued number above and submit a copy of an official IRS letter confirming such designation.

Please list all locations at which training will take place. Attach additional sheets of paper if necessary.

Street Address, Suite No. (Please, no P.O. Box) City State Zip Code

Street Address, Suite No. (Please, no P.O. Box) City State Zip Code

Street Address, Suite No. (Please, no P.O. Box) City State Zip Code

Street Address, Suite No. (Please, no P.O. Box) City State Zip Code

C. Qualifications of Training Program Manager

For more information, see the instructions and the official requirements (40 CFR § 745.225(c)) reprinted there.

Name of Training Program Manager: Last First Middle

Training Program Manager's Title:

Previous and/or Maiden Name(s), if applicable:

ACCREDITATION APPLICATION FOR TRAINING PROGRAMS (CONTINUED)

Name the colleges, graduate schools, and/or technical, vocational, or special trade schools that the training program manager has attended. Please indicate hours completed, highest level completed, major course of study, degrees received, and year graduated, if applicable.

School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated
School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated
School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated
School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated

Please indicate how the training program manager satisfies the requirements of §745.225(c)(1):

Construction industry:  Experience or  Education or  Training

Location: \_\_\_\_\_ Years: \_\_\_\_\_  
City State

and one of the following:

Teaching workers or adults:  Experience or  Education or  Training

Location: \_\_\_\_\_ Years: \_\_\_\_\_  
City State

If applicable, indicate: Date training completed: \_\_\_\_\_  
Month/Day/Year

Date teaching certification received: \_\_\_\_\_  
Month/Day/Year

or:

Bachelor's or graduate degree in an appropriate field, listed above;

or:

Experience managing a training program specializing in environmental hazards;

Program Name: \_\_\_\_\_ Years: \_\_\_\_\_

Name of Training Center: \_\_\_\_\_ Location: \_\_\_\_\_  
City State

**D. Qualifications of Principal Course Instructor**

For more information, see the instructions and the official requirements (40 CFR § 745.225(c)) reprinted there.

Name of Principal Course Instructor: \_\_\_\_\_  
Last First Middle

Training Program Manager's Title: \_\_\_\_\_

Previous and/or Maiden Name(s), if applicable: \_\_\_\_\_

Name the colleges, graduate schools, and/or technical, vocational, or special trade schools that the principal course instructor has attended. Please indicate hours completed, highest level completed, major course of study, degrees received, and year graduated, if applicable.

School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated
School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated
School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated
School	Course of Study	Hours Completed	Highest Level Completed	Degree(s) Received	Year Graduated

Please indicate how the principal course instructor satisfies the requirements of §745.225(c)(2):

• Teaching workers or adults:  Experience  Education or  Training  
Location: \_\_\_\_\_ Years: \_\_\_\_\_  
City State

If applicable, indicate: Date training completed: \_\_\_\_\_  
Month/Day/Year

Date teaching certification received: \_\_\_\_\_  
Month/Day/Year

• Completion of accredited lead-specific training. Check as many as apply and complete information for each. Attach additional sheets of paper if necessary.

Discipline:  Inspector  Risk Assessor  Supervisor  Project Designer  Abatement Worker

Specify EPA or name of accrediting EPA-authorized State, Territory, or Tribe: \_\_\_\_\_

Name of Trainer: \_\_\_\_\_ Name of Training Center: \_\_\_\_\_

Training Center Address: \_\_\_\_\_  
Street Address, Suite No. City State Zip Code

Training Center Phone: (\_\_\_\_) \_\_\_\_-\_\_\_\_ ext. \_\_\_\_ Date Training Completed: \_\_\_\_\_  
Month/Day/Year

•  Experience or  Education or  Training in an appropriate field

Field: \_\_\_\_\_

Location: \_\_\_\_\_  
City State

Years of applicable experience or education: \_\_\_\_\_

**E. Other Qualifications**

Discipline in which last accreditation received: \_\_\_\_\_ Date received: \_\_\_\_\_  
Month/Day/Year

Name and Location of Training Program: \_\_\_\_\_  
Name Location (City, State)

Course title(s), if applicable: \_\_\_\_\_

Have you received approval for training courses from a State, Territory, or Indian Tribe? Yes No  
(circle one)

If yes, please attach a detailed explanation.

Do you hold current permits, licenses, certifications, or registrations in the lead-based paint activity field in any area/region? Yes No  
(circle one)

If yes, please fill in the following blanks, one line for each permit, license, certification, or registration. Attach additional sheets of paper if necessary. For more information, see the instructions and the official requirements reprinted there.

Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name).	Certification/Identification Number	Date received
Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name).	Certification/Identification Number	Date received
Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name).	Certification/Identification Number	Date received
Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name).	Certification/Identification Number	Date received

**F. Areas/Regions**

Please list all areas or regions in which you intend to conduct lead-based paint activity training. If listing a tribal area, include the Tribe's full name and mailing address. Attach additional sheets of paper if necessary.

The fee that you must pay is affected by the number of areas/regions in which you plan to conduct training. See the **FEE SHEET**, included with this form, for the fee you must include with your application.

---

---

---

**G. Training Course Material**

Will you be using EPA-recommended model training materials or EPA-authorized State, Territory, or Indian Tribe approved training materials? Yes No  
(circle one)

If no, please see the instructions for alternative training materials.

**H. Additional Information**

Use the following space for any additional information or comments that you feel are relevant and should be considered with the application. Attach additional sheets of paper if necessary.

---

---

---

**I. Certification Statement**

Privacy Act Statement: This statement is provided pursuant to the Privacy Act of 1974, 5 U.S.C. §552a. The authority for collecting this information is 40 C.F.R. Part 745, and 15 U.S.C. §§2682 and 2684. The information collected on this form will be used to establish the applicants eligibility to receive accreditation to conduct training in the field of lead-based paint activities in target housing and child-occupied facilities. Disclosure of this information is voluntary, however, the failure to provide this information may delay or prevent an applicant's accreditation. This information may be disclosed in appropriate and limited circumstances to: EPA employees, contractors, grantees or others when performing duties that are compatible with the purpose for which this information is collected and when this information is necessary to complete the task; a member of Congress in response to a request made with your consent and on your behalf; to appropriate law enforcement agencies responsible for investigating, enforcing, prosecuting or implementing specific statutes, codes or regulations and this information is relevant to that responsibility; an appropriate adjudicative body when such disclosure is compatible with the purpose for which this information is collected and the EPA or the United States has an interest in the proceeding; and the Department of the Treasury, the General Services Administration, the General Accounting Office and other Federal, State, and Local Agencies for authorized activities related to this information.

I certify that the lead-based paint activity training program described in Parts A through G of this application, including any attachments, meets the requirements established in paragraph (c) of 40 CFR § 745.225. I hereby attest and affirm that the information included on this application, including any attachments, is true and accurate to the best of my belief and knowledge. I acknowledge that any accreditation issued pursuant to this application, including any attachments, will be subject to revocation if issuance was based on incorrect or inadequate information that materially affected the decision to issue the accreditation. I also attest and affirm that I will maintain my accreditation(s) according to 40 CFR § 745.225 and conduct lead-based paint activities training only in those fields in which I have received accreditation.

A false statement on this form may lead to prosecution under 18 U.S.C . 1001 or to imposition of applicable criminal and civil penalties and/or administrative remedies.

\_\_\_\_\_  
Training Program Manager's Signature \_\_\_\_\_  
Date Signed

**Before you mail your application, check to make sure that you have:**

- Filled out all sections of the application that apply
- Enclosed education, experience, and other documents for the Training Program Manager and Principal Course Instructor
- Enclosed a quality control plan
- Enclosed a copy of the course test blueprint
- Enclosed a description of facilities and equipment
- Enclosed a description of procedures for hands-on training
- Enclosed course manual(s) and course agenda(s) (if not using EPA training materials)
- Signed and dated the application
- Enclosed the appropriate accreditation fee(s) -- see the **FEE SHEET** for more information
- Made a copy of your application for your files

**Mail original completed application and supporting materials to:**

U.S. Environmental Protection Agency  
OPPTS/ Lead-Based Paint Activities Training Accreditation Request  
401 M Street, SW (Mail Code: 7404)  
Washington, D. C. 20460



# Instructions for Individuals Applying for Certification to Conduct Lead-Based Paint Activities

**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
**APPLICATION FOR INDIVIDUALS TO CONDUCT LEAD-BASED PAINT ACTIVITIES**

**Important:** Complete the instructions for individuals applying for certification to conduct lead-based paint activities and the special requirements reported there to complete this form. Fees should be paid in Application for Fees, instead of this application. Please type or print responses in black or blue ink only.

**A. Type of Certification Requested**  
 Select one of the following. You must also select the appropriate response(s) below.  
 Initial (first time) certification  
 Re-certification application  
 Recurrence of a test card  
 (Indicate the discipline(s) for which you are seeking certification.)  
 Inspector     Risk Assessor     Abatement Worker  
 Supervisor     Project Designer

**B. Applicant Information**  
 Name \_\_\_\_\_  
 Previous and/or Maiden Name(s) if applicable \_\_\_\_\_  
 Business Phone # \_\_\_\_\_  
 Home Address \_\_\_\_\_  
 Home Phone # \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 Business Mailing Address \_\_\_\_\_  
 Social Security # \_\_\_\_\_  
 Country of Legal Residence \_\_\_\_\_  
 Height \_\_\_\_\_ Weight \_\_\_\_\_ Date of Birth \_\_\_\_\_  
 Hair Color \_\_\_\_\_ Eye Color \_\_\_\_\_ Gender \_\_\_\_\_ Male Female  
 Race/Ethnicity \_\_\_\_\_

**C. Education**  
 High School \_\_\_\_\_  
 Have any technical education programs been completed, major areas of paper if necessary \_\_\_\_\_

**D. Experi**  
 As a lead design \_\_\_\_\_

**E. Lead**  
 Do you have an EPA SL \_\_\_\_\_  
 If yes, # \_\_\_\_\_

**F. Professional Certifications**  
 In the following blanks list professional certification, Registered Architect, Environmental Scientist, and any other relevant to document your 745 226(b)(2)(d) registered name.

**G. Areas/Re**  
 Please list all certification to a \_\_\_\_\_  
 The fee that you add \_\_\_\_\_ See the your application.

**H. Additional**  
 Use the following Attach add to \_\_\_\_\_

**Instructions for Photographs:**  
 Submit two identical passport sized photographs of your face, recent enough for the 30 day period. The photos should be 2 x 2 inches in size with an image of your head and shoulders taking up the majority of the area. Photographs must be clear, front view, taken in normal street clothing without a hat or any accessories and placed on firm paper with a plain light background. White background. Print clearly below each so that your application is changed and identifiable.

**Official Use Only**

**For information on EPA and other lead programs, see the web site, <http://www.epa.gov/lead/>**

## Instructions for Individuals Applying for Certification to Conduct Lead-Based Paint Activities

You may apply to the U.S. Environmental Protection Agency (EPA) to be certified to conduct lead-based paint activities as an **Inspector, Risk Assessor, Supervisor, Project Designer, or Abatement Worker**. The four sections of this booklet will guide you through the *Application for Individuals to Conduct Lead-Based Paint Activities*, help you determine the qualifications to demonstrate, assist with selecting the supporting materials for your application, and tell you what to expect through the certification process after you have submitted your application.

EPA can certify you to conduct lead-based paint activities in States, Tribal Lands, and U.S. Territories where EPA implements the lead-based paint certification program. If EPA does not administer the certification program in an area or region where you wish to work, you will need to apply directly to that State, Tribal Land, or Territory for certification. You can call 1-800-424-LEAD to find out whether you should apply to EPA for certification.

In your application, you will need to specify each discipline and area or region in which you plan to conduct lead-based paint activities and pay the appropriate fee(s) as listed on the **FEE SHEET** which was included with your application form. You can be certified only in the disciplines and areas or regions that you list on your application. If you want to be certified in an additional discipline, area, or region at a later time, you will need to reapply.

You may submit your application any time beginning March 1, 1999. After August 30, 1999, only certified individuals will be able to conduct lead-based paint activities in target housing and/or child-occupied facilities.

If you would like more information on EPA and other lead programs or if you have questions about the application process that are not answered in this booklet, see the web site: <http://www.epa.gov/lead/>, call the application assistance Help Line at 1-800-424-LEAD, or see the applicable portion of 40 *Code of Federal Regulations* §745.226 (40 CFR §745.226), which are reprinted beginning on page 12 of this booklet.

### **The Application Form**

You should use the *Application for Individuals to Conduct Lead-Based Paint Activities* to apply for first-time certification, re-certification, or replacement of a lost Lead-Based Paint Professional Identification Card. Instructions for first-time applicants begin on page 2. If you are applying for re-certification, instructions begin on page 5, and instructions for replacing a lost Lead-Based Paint Professional Identification Card begin on page 6.

While much of the form is easy to understand, these instructions will help you fill out the form and avoid mistakes that could delay EPA's review of your application. The certification requirements for each of the disciplines are discussed later. The Federal regulation that established these requirements is also printed at the end of this booklet for your reference.

## I. Applying for First-Time Certification

### A. Type of Certification Requested

As an applicant for first-time certification, check the box next to Initial (first-time) certification (shown here). Also check the box(es) next to the discipline(s) for which you are applying for certification. You may apply for and receive certification in more than one discipline at the same time, as long as you demonstrate your qualifications for each discipline and pay the appropriate fees as specified in the **FEE SHEET**. The required qualifications are discussed in the section of this booklet on **Qualifications and Supporting Materials**, beginning on page 7.

#### A. Type of Certification Requested

Select one of the following. You must also select the appropriate discipline(s) below.

- Initial (first-time) certification
- Re-certification application
- Replacement of a lost card

Indicate the discipline(s) for which you are seeking certification or re-certification:

- Inspector
- Risk Assessor
- Abatement Worker
- Supervisor
- Project Designer

### B. Applicant Information

EPA will use the information in this section to issue your Lead-Based Paint Professional Identification Card and to track your certification status. You may list one to three addresses: your business address, mailing address, and/or your home address. At least one of the addresses must not be a post office box.

You must complete all fields in this section. Green Card number must be filled out only if you have a Green Card. Giving your race or ethnicity is always optional.

Submit two identical passport-sized photographs of you alone, recent enough to be a good likeness (normally taken within the last 6 months). As shown in the example on the application form, photographs should be 2 x 2 inches in size with an image of your head and shoulders taking up the majority of the area. Photographs must be clear, front view, full face, taken in normal street clothing without a hat or dark glasses, and printed on thin paper with a plain light (white or off-white) background. Photographs retouched so that your appearance is changed are unacceptable.

### C. Education

Use the space provided to describe the formal education that you have received. In addition to your high school(s), you should give information about any technical, vocational, or special trade schools, colleges, and/or graduate schools you have attended. List a school even if you did not graduate. See the section of this booklet on **Qualifications and Supporting Materials** for a description of the education qualifications that you may have to demonstrate for certification as a risk assessor, supervisor, or project designer.

### D. Experience

You must complete this section if you are applying for certification or re-certification as a risk assessor, supervisor, or project designer. EPA will consider your experience in a field related to your intended discipline when it evaluates your application. See the section of this booklet on **Qualifications and Supporting Materials** for a description of the experience qualifications that you must demonstrate for certification as a risk assessor, supervisor, or project designer.

E. Training

Complete this section, depicted below, with information about the accredited training course you took in the discipline for which you are seeking certification. If you are applying for more than one certification, attach a sheet of paper listing the same information, shown below, for the additional accredited training course(s). If you are applying for risk assessor certification, be sure to give the appropriate information about both your accredited risk assessor training course and accredited inspector training course. If you are a candidate for project designer, also provide the same information about both your accredited project designer training course and accredited supervisor training course.

Name of Trainer: \_\_\_\_\_

Name of Training Center: \_\_\_\_\_

Training Center Address: \_\_\_\_\_  
Street Address, Suite No. City State Zip Code

Training Center Phone: (\_\_\_\_) \_\_\_\_-\_\_\_\_ ext. \_\_\_\_ Date Training Completed: \_\_\_\_\_  
Month/Day/Year

If training was conducted in a language other than English, specify language: \_\_\_\_\_

Training Certificate Identification Number: \_\_\_\_\_

Please check the type of test you took:  
 Course test  Hands-on assessment  Proficiency test

F. Professional Certifications

In this section, identify any relevant professional certifications that you hold. See the section of this booklet on **Qualifications and Supporting Materials** for a description of the professional certification qualifications that you may have to demonstrate for certification as a risk assessor.

G. Lead-Based Paint Activity Violations

If you have any past, present, or pending lead-based paint activity violations, you must include a written explanation of the violation(s) with your application, regardless of where or when the violation(s) occurred.

H. Areas/Regions

EPA can certify you to conduct lead-based paint activities in States, Tribal Lands, and U.S. Territories where EPA implements the lead-based paint certification program. If EPA does not administer the certification program in an area or region where you wish to work, you will need to apply directly to that State, Tribal Land, or Territory for certification. You can call 1-800-424-LEAD to find out whether you should apply to EPA for certification.

In this section, list all the areas or regions in which you plan to perform lead-based paint activities, including only the States, Tribal lands, and Territories with EPA administered programs. See the **FEE SHEET** for the appropriate fees if you intend to work in more than one area or region.

I. Additional Information

Please use the space provided in this section to give any additional relevant information or comments that you believe EPA should consider with your application. Attach additional sheets if you need more space.

J. Signature

After reading the Privacy Act Statement and subsequent statement, sign and date your application. The check list that follows your signature will help you submit all the materials EPA needs to review your application. The next two major sections of this booklet, **Qualifications and Supporting Materials** (page 7)

and **Demonstrating Your Qualifications** (page 8, will help you decide what you should send with your application form.

**II. Applying for Re-Certification**

If you completed an accredited training course with a course test and (if applicable) a hands-on assessment, you must be re-certified every three years. If you completed an accredited course that included a proficiency test, you must be re-certified every five years.

If you are certified in more than one discipline, carefully record when you need to be re-certified in each discipline. Submit your application at least 90 days before your current certification expires since EPA may take up to 90 days to approve or disapprove your request for re-certification. If your certification expires before you are re-certified, you will not be able to conduct lead-based paint activities before your re-certification has been approved.

Applicants for re-certification should use the *Application for Individuals to Conduct Lead-Based Paint Activities*, and must complete Sections **A. Type of Certification Requested**, **B. Applicant Information**, **E. Training**, and **J. Signature**, as discussed below. Also complete other sections as needed to update the information (such as your education) you provided on your most recent certification or re-certification application. If you are applying for re-certification in more than one discipline or in more than one area or region, be sure to include the appropriate fees as specified on the **FEE SHEET**.

**A. Type of Certification Requested**

When applying for re-certification, check the box next to Re-certification application (shown here). Also check the box(es) next to the discipline(s) for which you are applying for re-certification. You may apply for and receive re-certification in more than one discipline at the same time, as long as you demonstrate your qualifications for each discipline and pay the appropriate fees as specified in the **FEE SHEET**.

**A. Type of Certification Requested**  
 Select one of the following. You must also select the appropriate discipline(s) below.

Initial (first-time) certification  
 Re-certification application  
 Replacement of a lost card

Indicate the discipline(s) for which you are seeking certification or re-certification:

Inspector     Risk Assessor     Abatement Worker  
 Supervisor     Project Designer

**B. Applicant Information**

EPA will use the information in this section to issue your Lead-Based Paint Professional Identification Card and to track your certification status. You may provide one to three addresses: your business address, mailing address, and/or your home address. At least one of the addresses must not be a post office box.

You must complete all fields in this section. Green Card number must be filled out only if you have a Green Card. Giving your race or ethnicity is always optional.

Submit two identical passport-sized photographs of you alone, recent enough to be a good likeness (normally taken within the last 6 months). As shown in the example on the application form, photographs should be 2 x 2 inches in size with an image of your head and shoulders taking up the majority of the area. Photographs must be clear, front view, full face, taken in normal street clothing without a hat or dark glasses, and printed on thin paper with a plain light (white or off-white) background. Photographs retouched so that your appearance is changed are unacceptable.



## Qualifications and Supporting Materials

When applying for first-time certification, you must submit a completed application form and supporting materials demonstrating your qualifications for certification in the discipline(s) you have chosen. You do not need to submit more than one copy of a document even if the same qualification must be shown for more than one discipline for which you are requesting certification. The section on **Demonstrating your Qualifications**, beginning on 15, will help you determine what to send with your application.

All applicants must submit the document(s) described in one of the following:

1. A copy of a valid lead-based paint activities certification (or equivalent) from a State, U.S. Territory, Tribe, or the District of Columbia if it has been authorized by EPA to implement a lead-based paint activity certification program; or
2. A copy of the valid course completion certificate(s) that you received when you successfully completed the accredited training course in your discipline(s);<sup>1</sup> or
3. Until August 10, 1999, proof that you received training in a lead-based paint activity between October 1, 1990, and March 1, 1999, and successfully completed an accredited refresher training course.

If applying for certification, following either number 2 or 3 above. You also need to demonstrate that you meet the requirements for your discipline described below.

### I. Additional Requirements for Inspector

If you are a candidate for certification as an inspector, you do not have to meet any requirements beyond those already described.

### II. Additional Requirements for Risk Assessor

Applicants for certification as a risk assessor need to show that they have obtained all the qualifications in one of the following:

- A bachelor's degree and one year of experience in a related field (e.g., lead, asbestos, environmental remediation, or construction); or
- An associates degree and two years experience in a related field (e.g., lead, asbestos, environmental remediation, or construction); or
- Certification as an industrial hygienist, professional engineer, registered architect or certification in a related engineering, health, or environmental field (e.g., safety professional, environmental scientist); or
- A high school diploma (or equivalent) and at least three years of experience in a related field (e.g., lead, asbestos, environmental remediation, or construction).

### III. Additional Requirements for Supervisor

Applicants for certification as a supervisor must demonstrate either:

- One year of experience as a certified lead-based paint abatement worker; or

- At least two years of experience in a related field (e.g., lead, asbestos, or environmental remediation) or in the building trades.

#### **IV. Additional Requirements for Project Designer**

Applicants for certification as a project designer need to show that they have successfully completed an accredited training course for supervisors and have either:

- A bachelor's degree in engineering, architecture, or a related profession and one year of experience in building construction and design or a related field; or
- Four years of experience in building construction and design or a related field.

#### **V. Additional Requirements for Abatement Worker**

If you are a candidate for certification as an abatement worker, you do not have to meet any requirements beyond those already described.

### **Demonstrating Your Qualifications**

Your application package must include proof that you meet the qualifications for the discipline(s) in which you seek to be certified. EPA will not be able to review your application until it has the appropriate materials. There are a variety of ways for you to show you meet the requirements. If you think you meet a requirement but are not certain how you should demonstrate these qualifications, call the Help Line at 1-800-424-LEAD.

#### **I. Education Requirements**

You can show that you meet the education requirements for your discipline(s) by including either a copy of your official high school diploma or an official transcript from a college or other institution of higher learning.

#### **II. Experience Requirements**

You can submit resume(s), letters of reference, or other documentation of work experience including a copy of a commendation letter or a Certificate of Apprenticeship.

When you have assembled all the supporting materials to demonstrate your qualification, send them with your completed application and the appropriate fee (see the **FEE SHEET** that you received with your application form) in one package to EPA at the address on your application form. The rest of the certification process is described in the next section.

#### **III. Training Requirements**

You should submit a copy of valid course completion certificate(s) issued by accredited training program(s) to demonstrate satisfaction of any training requirement.

#### **IV. Professional Certification**

If you have obtained a professional certification, such as an industrial hygienist or professional engineer or have been certified in a related engineering, health, or environmental field, you should submit a copy of the official document awarding your certification.

## The Certification Process

EPA will approve or disapprove your request for certification within 90 days. Your course completion certificate will serve as interim certification for six months or until EPA has made a decision regarding your application.

Candidates for inspector, risk assessor, and supervisor follow one certification process, while candidates for project designer and abatement worker follow another. Each process is described below and depicted in a flow chart. As described beginning on page 5 of this booklet, all certified individuals must apply for re-certification to conduct lead-based paint activities every three or five years.

### I. Candidates for Inspector, Risk Assessor, or Supervisor

Exhibit 1 shows the certification process for inspectors, risk assessors, and supervisors. After receiving your application, EPA will send you a letter to tell you that it is either complete or incomplete. If your application is incomplete, the letter will list the missing information. You must submit any missing information within 30 days, as specified in the letter. EPA will return your application package on the 31st day if it is still incomplete.

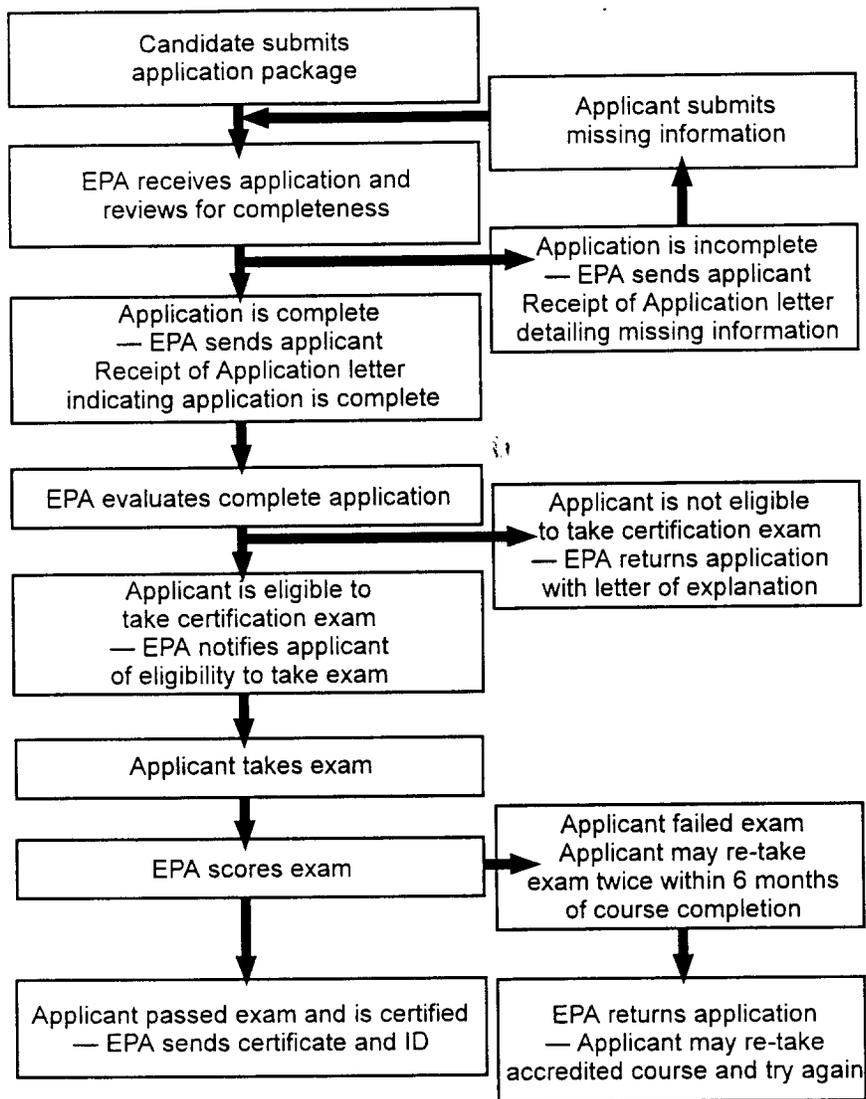
EPA will review your complete application and notify you by postcard that you are eligible to take the certification examination. If you are not eligible to take the exam, EPA will return your application and supporting materials with a letter explaining why it was not approved.

After you have taken the certification examination and it has been evaluated, EPA will send you a letter reporting your score and whether you passed or failed. If you did not pass, you may register for and take the exam again.

You may take the certification exam a maximum of three times in the six months after you receive your course completion certificate. If you do not obtain a passing score within that six months, you must re-take the appropriate accredited training course and reapply for certification.

After your application has been approved and you have passed the certification test, EPA will send you your EPA certificate and your Lead-Based Paint Professional Identification Card.

Exhibit 1. The Certification Process for Inspectors, Risk Assessors, and Supervisors

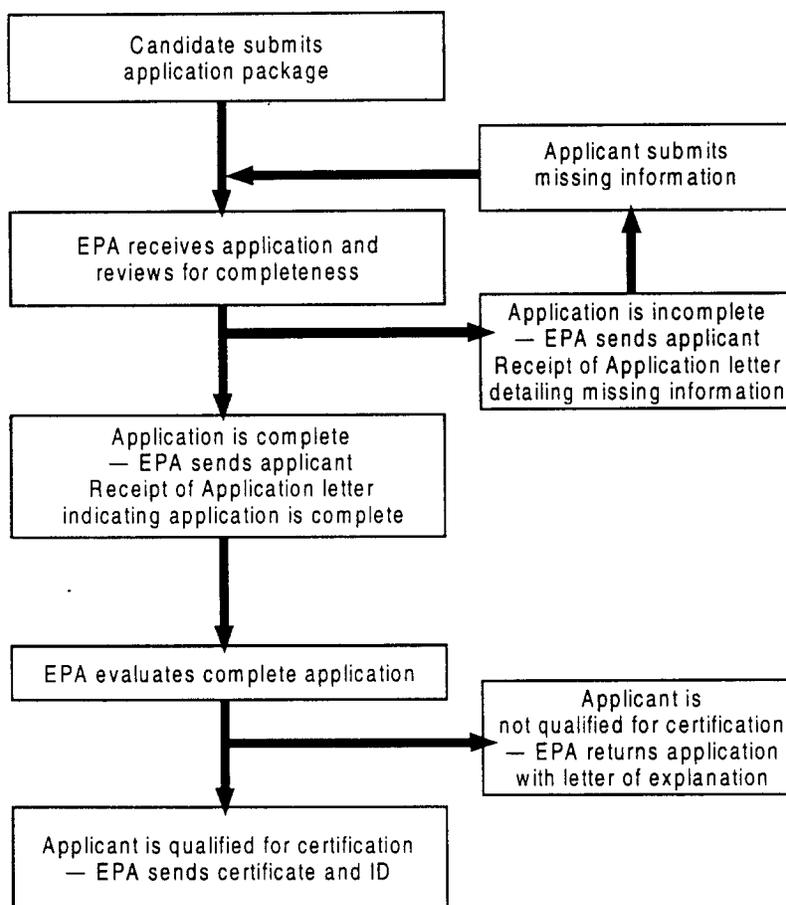


## II. Candidates for Project Designer or Abatement Worker

Exhibit 2 shows the certification process for project designers and abatement workers. After receiving your application, EPA will send you a letter to tell you that it is either complete or incomplete. If your application is incomplete, the letter will list the missing information. You must submit any missing information within 30 days, as specified in the letter. EPA will return your application package on the 31st day if it is still incomplete.

EPA will review your complete application and notify you of its decision to approve or disapprove your certification(s). You will receive a letter of explanation if your application is not approved. If your application has been approved, EPA will send you your EPA certification certificate and your Lead-Based Paint Professional Identification Card.

Exhibit 2. The Certification Process for Project Designers and Abatement Workers



**Paperwork Reduction Act Notice:** The annual public burden for this collection of information is estimated to be 1 hour for inspectors, risk assessors and supervisors, and 0.5 hours for workers and project designers per response, including the time needed for reading the instructions and completing the necessary information contained in this form. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Regulatory Information Division, U.S. Environmental Protection Agency (Mail Code 2137), 401 M Street, S.W., Washington, DC 20460. Include OMB number 2070-0155 in any correspondence. Do not send the completed form or requested information to this address. The actual information or form should be submitted in accordance with the instructions accompanying the form, or as specified in the corresponding regulations.

## 40 CFR Part 745

## Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities

**§ 745.226 Certification of individuals and firms engaged in lead-based paint activities: target housing and child-occupied facilities.**

- (a) Certification of individuals.** (1) Individuals seeking certification by EPA to engage in lead-based paint activities must either:
- (i) Submit to EPA an application demonstrating that they meet the requirements established in paragraphs (b) or (c) of this section for the particular discipline for which certification is sought; or
  - (ii) Submit to EPA an application with a copy of a valid lead-based paint activities certification (or equivalent) from a State or Tribal program that has been authorized by EPA pursuant to subpart Q of this part.
- (2) Individuals may first apply to EPA for certification to engage in lead-based paint activities pursuant to this section on or after March 1, 1999.
- (3) Following the submission of an application demonstrating that all the requirements of this section have been met, EPA shall certify an applicant as an inspector, risk assessor, supervisor, project designer, or abatement worker, as appropriate.
- (4) Upon receiving EPA certification, individuals conducting lead-based paint activities shall comply with the work practice standards for performing the appropriate lead-based paint activities as established in § 745.227.
- (5) It shall be a violation of TSCA for an individual to conduct any of the lead-based paint activities described in § 745.227 after August 30, 1999, if that individual has not been certified by EPA pursuant to this section to do so.
- (b) Inspector, risk assessor or supervisor.** (1) To become certified by EPA as an inspector, risk assessor, or supervisor, pursuant to paragraph (a)(1)(i) of this section, an individual must:
- (i) Successfully complete an accredited course in the appropriate discipline and receive a course completion certificate from an accredited training program.
  - (ii) Pass the certification exam in the appropriate discipline offered by EPA; and,
  - (iii) Meet or exceed the following experience and/or education requirements:
    - (A) Inspectors. (1) No additional experience and/or education requirements.
    - (2) [Reserved]
    - (B) Risk assessors. (1) Successful completion of an accredited training course for inspectors; and
    - (2) Bachelor's degree and 1 year of experience in a related field (e.g., lead, asbestos, environmental remediation work, or construction), or an Associates degree and 2 years experience in a related field (e.g., lead, asbestos, environmental remediation work, or construction); or (3) Certification as an industrial hygienist, professional engineer, registered architect and/or certification in a related engineering/health/environmental field (e.g., safety professional, environmental scientist); or
    - (4) A high school diploma (or equivalent), and at least 3 years of experience in a related field (e.g., lead, asbestos, environmental remediation work or construction).
- (c) Supervisor:** (1) One year of experience as a certified lead-based paint abatement worker; or
- (2) At least 2 years of experience in a related field (e.g., lead, asbestos, or environmental remediation work) or in the building trades.
- (2) The following documents shall be recognized by EPA as evidence of meeting the requirements listed in (b)(2)(ii) of this paragraph:
- (i) Official academic transcripts or diploma, as evidence of meeting the education requirements.
  - (ii) Resumes, letters of reference, or documentation of work experience, as evidence of meeting the work experience requirements.
  - (iii) Course completion certificates from lead-specific or other related training courses, issued by accredited training programs, as evidence of meeting the training requirements.
- (3) In order to take the certification examination for a particular discipline an individual must:
- (i) Successfully complete an accredited course in the appropriate discipline and receive a course completion certificate from an accredited training program.
  - (ii) Meet or exceed the education and/or experience requirements in paragraph (b)(1)(iii) of this section.
  - (4) The course completion certificate shall serve as interim certification for an individual until the next available opportunity to take the certification exam. Such interim certification shall expire 6 months after issuance.
  - (5) After passing the appropriate certification exam and submitting an application demonstrating that he/she meets the appropriate training, education, and/or experience prerequisites described in paragraph (b)(1) of this section, an individual shall be issued a certificate by EPA. To maintain certification, an individual must be re-certified as described in paragraph (e) of this section.
  - (6) An individual may take the certification exam no more than three times within 6 months of receiving a course completion certificate.
  - (7) If an individual does not pass the certification exam and receive a certificate within 6 months of receiving his/her course completion certificate, the individual must retake the appropriate course from an accredited training program before reapplying for certification from EPA.
- (c) Abatement worker and project designer.** (1) To become certified by EPA as an abatement worker or project designer, pursuant to paragraph (a)(1)(i) of this section, an individual must:
- (i) Successfully complete an accredited course in the appropriate discipline and receive a course completion certificate from an accredited training program.
  - (ii) Meet or exceed the following additional experience and/or education requirements:
    - (A) Abatement workers. (1) No additional experience and/or education requirements.
    - (2) [Reserved]
    - (B) Project designers. (1) Successful completion of an accredited training course for supervisors.
    - (2) Bachelor's degree in engineering, architecture, or a related profession, and 1 year of experience in building construction and design or a related field; or
    - (3) Four years of experience in building construction and design or a related field.
- (2) The following documents shall be recognized by EPA as evidence of meeting the requirements listed in this paragraph:
- (i) Official academic transcripts or diploma, as evidence of meeting the education requirements.
  - (ii) Resumes, letters of reference, or documentation of work experience, as evidence of meeting the work experience requirements.
  - (iii) Course completion certificates from lead-specific or other related training courses, issued by accredited training programs, as evidence of meeting the training requirements.
- (3) The course completion certificate shall serve as an interim certification until certification from EPA is received, but shall be valid for no more than 6 months from the date of completion.
- (4) After successfully completing the appropriate training courses and meeting any other qualifications described in paragraph (c)(1) of this section, an individual shall be issued a certificate from EPA. To maintain certification, an individual must be re-certified as described in paragraph (e) of this section.

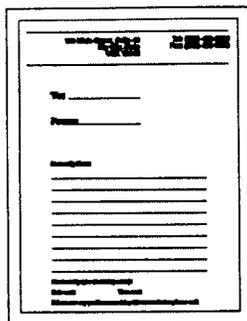
## LEAD-BASED PAINT ACTIVITY CERTIFICATION INSTRUCTIONS FOR INDIVIDUALS (CONTINUED)

- (d) Certification based on prior training. (1) Any individual who received training in a lead-based paint activity between October 1, 1990, and March 1, 1999 shall be eligible for certification by EPA under the alternative procedures contained in this paragraph. Individuals who have received lead-based paint activities training at an EPA-authorized State or Tribal accredited training program shall also be eligible for certification by EPA under the following alternative procedures:
- (i) Applicants for certification as an inspector, risk assessor, or supervisor shall:
    - (A) Demonstrate that the applicant has successfully completed training or on-the-job training in the conduct of a lead-based paint activity.
    - (B) Demonstrate that the applicant meets or exceeds the education and/or experience requirements in paragraph (b)(1)(iii) of this section.
    - (C) Successfully complete an accredited refresher training course for the appropriate discipline.
    - (D) Pass a certification exam administered by EPA for the appropriate discipline.
  - (ii) Applicants for certification as an abatement worker or project designer shall:
    - (A) Demonstrate that the applicant has successfully completed training or on-the-job training in the conduct of a lead-based paint activity.
    - (B) Demonstrate that the applicant meets the education and/or experience requirements in paragraphs (c)(1) of this section; and (C) Successfully complete an accredited refresher training course for the appropriate discipline.
- (2) Individuals shall have until August 30, 1999 to apply to EPA for certification under the above procedures. After that date, all individuals wishing to obtain certification must do so through the procedures described in paragraph (a), and paragraph (b) or (c) of this section, according to the discipline for which certification is sought.
- (e) Re-certification. (1) To maintain certification in a particular discipline, a certified individual shall apply to and be re-certified by EPA in that discipline by EPA either:
- (i) Every 3 years if the individual completed a training course with a course test and hands-on assessment; or
  - (ii) every 5 years if the individual completed a training course with a proficiency test.<sup>1</sup>
- (2) An individual shall be re-certified if the individual successfully completes the appropriate accredited refresher training course and submits a valid copy of the appropriate refresher course completion certificate.
- (g) Suspension, revocation, and modification of certifications of individuals engaged in lead-based paint activities. (1) EPA may, after notice and opportunity for hearing, suspend, revoke, or modify an individual's certification if an individual has:
- (i) Obtained training documentation through fraudulent means.
  - (ii) Gained admission to and completed an accredited training program through misrepresentation of admission requirements.
  - (iii) Obtained certification through misrepresentation of certification requirements or related documents dealing with education, training, professional registration, or experience.
  - (iv) Performed work requiring certification at a job site without having proof of certification.
  - (v) Permitted the duplication or use of the individual's own certificate by another.
  - (vi) Performed work for which certification is required, but for which appropriate certification has not been received.
  - (vii) Failed to comply with the appropriate work practice standards for lead-based paint activities at § 745.227.
  - (viii) Failed to comply with Federal, State, or local lead-based paint statutes or regulations.
- (2) In addition to an administrative or judicial finding of violation, for purposes of this section only, execution of a consent agreement in settlement of an enforcement action constitutes evidence of a failure to comply with relevant statutes or regulations.
- (i) Procedures for suspension, revocation, or modification of the certification of individuals or firms.
- (1) If EPA decides to suspend, revoke, or modify the certification of any individual or firm, it shall notify the affected entity in writing of the following:
- (i) The legal and factual basis for the suspension, revocation, or modification.
  - (ii) The commencement date and duration of the suspension, revocation, or modification.
  - (iii) Actions, if any, which the affected entity may take to avoid suspension, revocation, or modification or to receive certification in the future.
  - (iv) The opportunity and method for requesting a hearing prior to final EPA action to suspend, revoke, or modify certification.
  - (v) Any additional information, as appropriate, which EPA may provide.
- (2) If a hearing is requested by the certified individual or firm, EPA shall:
- (i) Provide the affected entity an opportunity to offer written statements in response to EPA's assertion of the legal and factual basis and any other explanations, comments, and arguments it deems relevant to the proposed action.
  - (ii) Provide the affected entity such other procedural opportunities as EPA may deem appropriate to ensure a fair and impartial hearing.
  - (iii) Appoint an official of EPA as Presiding Officer to conduct the hearing. No person shall serve as Presiding Officer if he or she has had any prior connection with the specific matter.
- (3) The Presiding Officer shall:
- (i) Conduct a fair, orderly, and impartial hearing within 90 days of the request for a hearing;
  - (ii) Consider all relevant evidence, explanation, comment, and argument submitted; and
  - (iii) Notify the affected entity in writing within 90 days of completion of the hearing of his or her decision and order. Such an order is a final EPA action subject to judicial review.
- (4) If EPA determines that the public health, interest, or welfare warrants immediate action to suspend the certification of any individual or firm prior to the opportunity for a hearing, it shall:
- (i) Notify the affected entity of its intent to immediately suspend certification for the reasons listed in paragraph (h)(1) of this section. If a suspension, revocation, or modification notice has not previously been issued, it shall be issued at the same time the immediate suspension notice is issued.
  - (ii) Notify the affected entity in writing of the grounds upon which the immediate suspension is based and why it is necessary to suspend the entity's accreditation before an opportunity for a hearing to suspend, revoke, or modify the individual's or firm's certification.
  - (iii) Notify the affected entity of the commencement date and duration of the immediate suspension.
  - (iv) Notify the affected entity of its right to request a hearing on the immediate suspension within 15 days of the suspension taking place and the procedures for the conduct of such a hearing.
- (5) Any notice, decision, or order issued by EPA under this section, transcript or other verbatim record of oral testimony, and any documents filed by a certified individual or firm in a hearing under this section shall be available to the public, except as otherwise provided by section 14 of TSCA or by part 2 of this title. Any such hearing at which oral testimony is presented shall be open to the public, except that the Presiding Officer may exclude the public to the extent necessary to allow presentation of information which may be entitled to confidential treatment under section 14 of TSCA or part 2 of this title.

## First-Time Applicant?

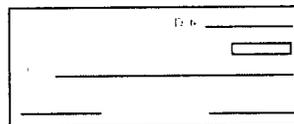
Your application package should include:

1)



A complete, signed application form

2)



A check or money order for the entire application fee

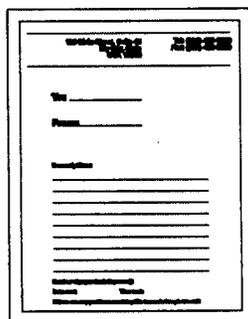
3)



A copy of a valid lead-based paint activities certification from an EPA-authorized State, U.S. Territory, Tribe, or D.C.

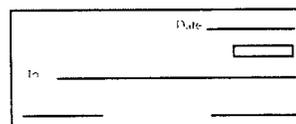
OR

1)



A complete, signed application form

2)



A check or money order for the entire application fee

3)



A training course completion certificate

4)



Documents that demonstrate your qualifications

**Please see inside for more information**



U. S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR INDIVIDUALS TO CONDUCT LEAD-BASED PAINT ACTIVITIES

Important: Consult the Instructions for Individuals Applying for Certification to Conduct Lead-Based Paint Activities and the official requirements reprinted there to complete this form. Firms should use the Application for Firms instead of this application. Please type or print responses in black or blue ink only.

A. Type of Certification Requested

Select one of the following. You must also select the appropriate discipline(s) below.

- Initial (first-time) certification
Re-certification application
Replacement of a lost card

Indicate the discipline(s) for which you are seeking certification or re-certification:

- Inspector Risk Assessor Abatement Worker
Supervisor Project Designer

Official Use Only

For information on EPA and other lead programs, see the web site: http://www.epa.gov/lead/

B. Applicant Information

Name: Last First Middle

Previous and/or Maiden Name(s), if applicable:

Business Phone #: Home Phone #:

Home Address: Street Address, Apt. No. City State Zip Code

Mailing Address: P.O. Box/Street Address City State Zip Code

Business Name: Name

Street Address, Suite No. City State Zip Code

Social Security #:

Date of Birth: Month/Day/Year

Country of Legal Residence:

Green Card #: (if applicable)

Height: feet inches

Weight: pounds

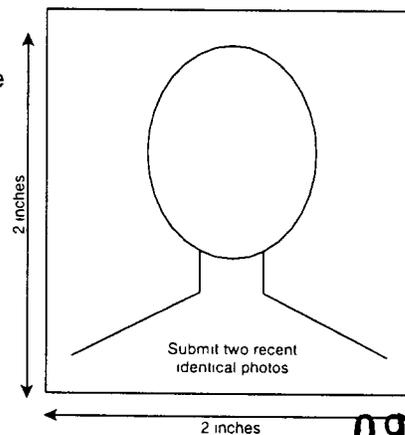
Gender: Male Female (circle one)

Eye Color:

Hair Color:

Race/Ethnicity: (optional)

Submit two identical passport-sized photographs of you alone, recent enough to be a good likeness (normally taken within the last 6 months). As shown in the example to the right, photographs should be 2 x 2 inches in size with an image of your head and shoulders taking up the majority of the area. Photographs must be clear, front view, full face, taken in normal street clothing without a hat or dark glasses, and printed on thin paper with a plain light (white or off-white) background. Photographs retouched so that your appearance is changed are unacceptable.



096

**C. Education**

High School: \_\_\_\_\_  
Name Location Highest Grade Completed (GED if applicable)

Name any technical, vocational, or special trade schools, colleges, and/or graduate schools you have attended. Indicate highest level completed, major course of study, degrees received, and year graduated, if applicable. Attach additional sheets of paper if necessary. See the instructions for suggestions on how to document your education.

School	Course of Study	Highest Level Completed	Degree(s) Received	Year Graduated

**D. Experience**

Answer the following items about your experience if you are applying for **risk assessor, supervisor, or project designer** certification or re-certification. Attach additional sheets of paper if necessary. For more information and suggestions on how to document your experience, see the instructions and the official requirements (40 CFR § 745.226(b),(c)) reprinted there.

Title or Occupation: \_\_\_\_\_ Supervisor's Name: \_\_\_\_\_

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

Street Address, Suite No. \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Business Phone #: (\_\_\_\_) \_\_\_\_-\_\_\_\_ ext. \_\_\_\_ Period of Employment: \_\_\_\_\_  
From To

**E. Training**

Answer the following items about the training you received in the discipline(s) for which you are seeking certification or re-certification. Attach additional sheets of paper if necessary. See the instructions for suggestions on how to document your training.

Name of Trainer: \_\_\_\_\_

Name of Training Center: \_\_\_\_\_

Training Center Address: \_\_\_\_\_  
Street Address, Suite No. City State Zip Code

Training Center Phone: (\_\_\_\_) \_\_\_\_-\_\_\_\_ ext. \_\_\_\_ Date Training Completed: \_\_\_\_\_  
Month/Day/Year

If training was conducted in a language other than English, please specify language: \_\_\_\_\_

Training Certificate Identification Number: \_\_\_\_\_

Please check the type of test you took:  Course test  Hands-on assessment  Proficiency test

**F. Professional Certifications**

In the following blanks, list professional certification(s) held, such as, Industrial Hygienist, Professional Engineer, Registered Architect, Environmental Scientist. Attach additional sheets of paper if necessary. For more information and suggestions on how to document your certifications, see the instructions and the official requirements (40 CFR § 745.226(b),(c)) reprinted there.

_____	_____
Certification	Area/Region where registered, if applicable (list State, Territory, or Indian Tribe name)
_____	_____
Certification	Area/Region where registered, if applicable (list State, Territory, or Indian Tribe name)
_____	_____
Certification	Area/Region where registered, if applicable (list State, Territory, or Indian Tribe name)

Do you hold current permits, licenses, certifications, or registrations in the lead-based paint activity field in any area or region? Yes    No  
(circle one)

If yes, please fill in the following blanks, one line for each permit, license, certification, or registration held. Attach additional sheets of paper if necessary. For more information and suggestions on how to document your permits, licenses, certifications, or registrations, see the instructions and the official requirements (40 CFR § 745.226(b),(c)) reprinted there.

_____	_____	_____	_____
Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name)	Certification/Identification Number	Date received
_____	_____	_____	_____
Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name)	Certification/Identification Number	Date received
_____	_____	_____	_____
Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name)	Certification/Identification Number	Date received

**G. Lead-Based Paint Activity Violations**

Do you have any past, present, or pending lead-based paint activity violations of EPA, State, Territory, or Indian Tribe regulations? Yes    No  
(circle one)

If yes, please attach a written explanation.

**H. Areas/Regions**

Please list all the areas or regions in which you intend to perform lead-based paint activities. You will be eligible for certification to work only in those areas or regions. Attach additional sheets of paper if necessary.

The fee that you must pay is affected by the number of areas or regions in which you plan to conduct lead-based paint activities. See the **FEE SHEET**, which was included with your application form, to determine the fee you must pay with your application.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**I. Additional Information**

Use the following space for any additional information or comments that you want EPA to consider with your application. Attach additional sheets of paper if necessary.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**J. Signature**

Privacy Act Statement: This statement is provided pursuant to the Privacy Act of 1974, 5 U.S.C. §552a. The authority for collecting this information is 40 C.F.R. Part 745, and 15 U.S.C §§2682 and 2684. The information collected on this form will be used to establish the applicants eligibility for certification to conduct lead-based paint activities in target housing and child-occupied facilities. Disclosure of this information is voluntary, however, the failure to provide this information may delay or prevent an applicant's certification. This information may be disclosed in appropriate and limited circumstances to: EPA employees, contractors, grantees or others when performing duties that are compatible with the purpose for which this information is collected and when this information is necessary to complete the task; a member of Congress in response to a request made with your consent and on your behalf; to appropriate law enforcement agencies responsible for investigating, enforcing, prosecuting or implementing specific statutes, codes or regulations and this information is relevant to that responsibility; an appropriate adjudicative body when such disclosure is compatible with the purpose for which this information is collected and the EPA or the United States has an interest in the proceeding; and the Department of the Treasury, the General Services Administration, the General Accounting Office and other Federal, State, and Local Agencies for authorized activities related to this information.

Please sign your name and write the date in the blanks below if you understand and agree with the following statement:

I hereby attest and affirm that the information included on this application, including any attachments, is true and accurate to the best of my belief and knowledge. I acknowledge that any certification issued pursuant to this application, including any attachments, will be subject to revocation if issuance was based on incorrect or inadequate information that materially affected the decision to issue the certification. I also attest and affirm that I will maintain my certification(s) according to 40 CFR § 745.226, follow work practice standards according to 40 CFR § 745.227, and conduct lead-based paint activities only in those fields in which I have received certification.

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Date Signed

\_\_\_\_\_  
Applicant's Title (if applicable)

**Before you mail your application, check to make sure that you have:**

- Filled out all sections of the application that apply to you
- Signed and dated the application
- Enclosed copy of your course completion certificate(s)
- Enclosed documentation of your education, experience, and professional certification(s), if necessary
- Enclosed any other documentation needed -- See the instructions for more information
- Enclosed the appropriate certification fee(s) -- See the **FEE SHEET** for more information
- Enclosed two identical passport-sized photos of yourself
- Made a copy of your application for your files

**Mail original completed application and supporting materials in one package to:**

U.S. Environmental Protection Agency  
OPPTS/ Lead-Based Paint Activities Certification Request  
401 M Street, SW (Mail Code: 7404)  
Washington, D. C. 20460



# Instructions for Firms Applying for Certification to Conduct Lead-Based Paint Activities

Before you mail your application, check to make sure that you have:

- Filled out all sections of the form
- Signed

**APPLICATION FOR FIRMS TO CONDUCT LEAD-BASED PAINT ACTIVITIES**

**Important:** This Certification Letter will serve as a firm's application to EPA for certification to perform lead-based paint work. Consult the Instructions for Firms Applying for Certification to Conduct Lead-Based Paint Activities and the check requirements included there to complete it. Firms, individuals should use the Application for individuals instead of this form. **Please type or print responses in black or blue ink only.**

**A. Types of Certified Individuals Employed**

Select one of the following. Also select the appropriate classification below.

- Certification application
- Renewal of a lost certificate
- Certification renewal

Indicate the types of certified individuals the firm intends to employ (check one in the boxes)

- Inspector
- Risk Assessor
- Project Designer
- Abatement Worker
- Supervisor

**B. Applicant Information**

Name of Firm \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_

Name of Attesting Individual \_\_\_\_\_ Attesting Individual's Phone (\_\_\_\_) \_\_\_\_\_

Firm's Phone (\_\_\_\_) \_\_\_\_\_

**C. Professional Certifications**

Does the firm hold current permits, licenses, certifications, or registrations in the lead-based paint activity field in any state or region?

If yes, please list in the following (State, one line for each permit, license, certification, or registration held. Attach additional sheets of paper if necessary. For more information, refer to the instructions and the official requirements (40 CFR 9, 29, 220.7) provided there.

State/Region	Permit/License/Certification/Registration	Expiration Date

For information on EPA and other lead programs, see the web site: <http://www.epa.gov/lead/>

Lead-based paint activities may require the use of lead-based paint test kits and other equipment. When you plan to conduct a lead-based paint activity, you must determine if you must use a test kit.

How do you determine if you must use a test kit? When the employee does not follow the instructions on the test kit, you must use a test kit.

## **Instructions for Firms Applying for Certification to Conduct Lead-Based Paint Activities**

Your firm may apply to the U.S. Environmental Protection Agency (EPA) to be certified to conduct lead-based paint activities. The two sections of this booklet will guide you through the *Application for Firms to Conduct Lead-Based Paint Activities* and tell you what to expect through the certification process after you have submitted your application.

Once your firm is certified, its certified employees will be able to conduct lead-based paint activities in States, Tribal Lands, and U.S. Territories where EPA implements the lead-based paint certification program. If EPA does not administer the certification program in an area or region where you wish to work, you will need to apply directly to that State, Tribal Land, or Territory for certification. You can call 1-800-424-LEAD to find out whether you should apply to EPA for certification.

You may submit your application any time beginning March 1, 1999. After August 30, 1999, only certified firms will be able to conduct lead-based paint activities in target housing and/or child-occupied facilities.

If you would like more information on EPA and other lead programs or if you have questions about the application process that are not answered in this booklet, see the web site: <http://www.epa.gov/lead/>, call the application assistance Help Line at 1-800-424-LEAD, or see the applicable portion of 40 *Code of Federal Regulations* §745.226 (40 CFR §745.226), which are reprinted beginning on page 4 of this booklet.

## **The Application Form**

To apply for certification, your firm must submit to EPA a letter attesting that the firm will employ only appropriately certified individuals to conduct lead-based paint activities. The letter also must attest that the firm and its employees will follow the work practice standards for lead-based paint activities in 40 CFR §745.227. EPA has developed the *Application for Firms to Conduct Lead-Based Paint Activities* to serve as a firm's certification letter.

You should use the *Application for Firms to Conduct Lead-Based Paint Activities* to apply for your firm's certification or replacement of your firm's lost certificate. While much of the form is easy to understand, these instructions will help you complete the form and avoid mistakes that could delay EPA's review of the application.

### **I. Applying for Certification**

#### **A. Type(s) of Certified Individuals Employed**

When applying for firm certification, check the box next to Certification application (shown here). You also need to check the box(es) next to the discipline(s) in which your employees are or will be certified.

#### **B. Applicant Information**

In this section, provide your firm's business address, which is required and must not be a post office box. Also list another mailing address if your firm receives mail elsewhere.

#### **A. Type(s) of Certified Individuals Employed**

Select one of the following. Also select the appropriate discipline(s) below.

- Certification application
- Replacement of a lost certificate
- Certification renewal

Indicate the type(s) of certified individuals the firm intends to employ (*check one to five boxes*).

- Inspector
- Risk Assessor
- Abatement Worker
- Supervisor
- Project Designer

**C. Professional Certifications**

This section, shown below, asks for information about your firm's certifications in the lead-based paint activity field. Please identify each permit, license, certification, or registration. Attach additional sheets of paper to your application if your firm holds more than six professional certifications.

Does the firm hold current permits, licenses, certifications, or registrations in the lead-based paint activity field in any area or region? Yes  No  (circle one)

If yes, please fill in the following blanks, one line for each permit, license, certification, or registration held. Attach additional sheets of paper if necessary. For more information, refer to the instructions and the official requirements (40 CFR § 745.226(f)) reprinted there.

Discipline in which certification held	Area/Region (list State, Territory, or Indian Tribe name)	Certification/Identification Number	Date received

**D. Lead-Based Paint Activity Violations**

If your firm has any past, present, or pending lead-based paint activity violations, you must include a written explanation of the violation(s) with your application, regardless of where or when the violation(s) occurred.

**E. Areas/Regions**

EPA can certify you to conduct lead-based paint activities in States, Tribal Lands, and U.S. Territories where EPA implements the lead-based paint certification program. If EPA does not administer the certification program in an area or region where you wish to work, you will need to apply directly to that State, Tribal Land, or Territory for certification. You can call 1-800-424-LEAD to find out whether you should apply to EPA for certification.

In this section, list all the areas or regions in which you plan to perform lead-based paint activities, including only the States, Tribal lands, and Territories with EPA administered programs. See the **FEE SHEET** for the appropriate fees if you intend to work in more than one area or region.

**F. Certification Statement**

You must complete the blanks in the certification statement, read the Privacy Act Statement and the subsequent statement, and sign and date the application.

The checklist following your signature will help you make sure your application package is complete. In particular, be sure to sign and date the application form, and enclose the appropriate certification fees. The **FEE SHEET**, which was included with your application form, specifies the fee that you must send to EPA with your application.

**II. Replacement of a Lost Certificate**

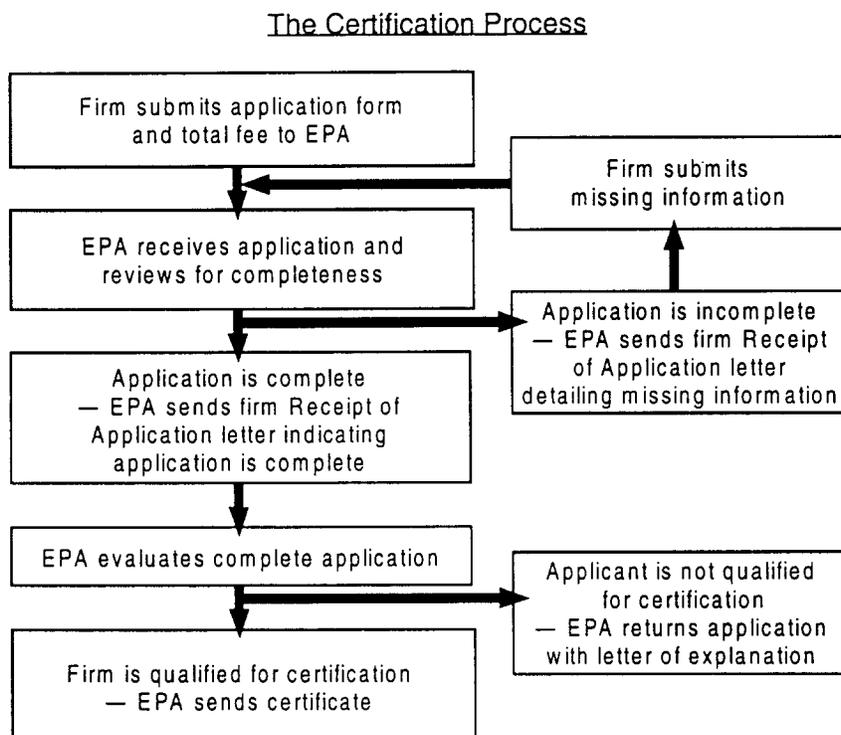
To replace a lost certificate of approval, you need to fill out a new *Application for Firms to Conduct Lead-Based Paint Activities*. Complete only sections **A. Type(s) of Certified Individuals Employed**, **B. Applicant Information** and **F. Certification Statement**. Sign and date the application.

The **FEE SHEET**, which was included with your application form, lists the fee for replacing a lost certificate. Send your signed application and the appropriate fee to EPA at the address printed on the application form.

## The Certification Process

This flow chart depicts the certification process. After receiving your firm's application, EPA will send you a letter to tell you whether it is complete or incomplete. If the application is incomplete, the letter will list the missing information. You must submit any missing information within 30 days, as will be specified in the letter. Otherwise, EPA will return your firm's application package on the 31st day.

EPA will approve or disapprove a complete request for certification within 90 days. Once your application has been approved, EPA will send a certificate of approval. Your firm will receive a letter of explanation if EPA decides to disapprove your firm's application.



**Paperwork Reduction Act Notice:** The annual public burden for this collection of information is estimated to be 7.5 hours for firms, including the time needed for reading the instructions and completing the necessary information contained in this form. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Regulatory Information Division, U.S. Environmental Protection Agency (Mail Code 2137), 401 M Street, S.W., Washington, DC 20460. Include OMB number 2070-0155 in any correspondence. Do not send the completed form or requested information to this address. The actual information or form should be submitted in accordance with the instructions accompanying the form, or as specified in the corresponding regulations.

## 40 CFR Part 745

## Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities

**§ 745.226 Certification of individuals and firms engaged in lead-based paint activities: target housing and child-occupied facilities.**

(f) **Certification of firms.** (1) All firms which perform or offer to perform any of the lead-based paint activities described in § 745.227 after August 30, 1999 shall be certified by EPA.

(2) A firm seeking certification shall submit to EPA a letter attesting that the firm shall only employ appropriately certified employees to conduct lead-based paint activities, and that the firm and its employees shall follow the work practice standards in § 745.227 for conducting lead-based paint activities.

(3) From the date of receiving the firm's letter requesting certification, EPA shall have 90 days to approve or disapprove the firm's request for certification. Within that time, EPA shall respond with either a certificate of approval or a letter describing the reasons for a disapproval.

(4) The firm shall maintain all records pursuant to the requirements in § 745.227.

(5) Firms may first apply to EPA for certification to engage in lead-based paint activities pursuant to this section on or after March 1, 1999.

(h) Suspension, revocation, and modification of certifications of firms engaged in lead-based paint activities.

(1) EPA may, after notice and opportunity for hearing, suspend, revoke, or modify a firm's certification if a firm has:

(i) Performed work requiring certification at a job site with individuals who are not certified.

(ii) Failed to comply with the work practice standards established in § 745.227.

(iii) Misrepresented facts in its letter of application for certification to EPA.

(iv) Failed to maintain required records.

(v) Failed to comply with Federal, State, or local lead-based paint statutes or regulations.

(2) In addition to an administrative or judicial finding of violation, for purposes of this section only, execution of a consent agreement in settlement of an enforcement action constitutes evidence of a failure to comply with relevant statutes or regulations.

(i) Procedures for suspension, revocation, or modification of the certification of individuals or firms.

(1) If EPA decides to suspend, revoke, or modify the certification of any individual or firm, it shall notify the affected entity in writing of the following:

(i) The legal and factual basis for the suspension, revocation, or modification.

(ii) The commencement date and duration of the suspension, revocation, or modification.

(iii) Actions, if any, which the affected entity may take to avoid suspension, revocation, or modification or to receive certification in the future.

(iv) The opportunity and method for requesting a hearing prior to final EPA action to suspend, revoke, or modify certification.

(v) Any additional information, as appropriate, which EPA may provide.

(2) If a hearing is requested by the certified individual or firm, EPA shall:

(i) Provide the affected entity an opportunity to offer written statements in response to EPA's assertion of the legal and factual basis and any other explanations, comments, and arguments it deems relevant to the proposed action.

(ii) Provide the affected entity such other procedural opportunities as EPA may deem appropriate to ensure a fair and impartial hearing.

(iii) Appoint an official of EPA as Presiding Officer to conduct the hearing. No person shall serve as Presiding Officer if he or she has had any prior connection with the specific matter.

(3) The Presiding Officer shall:

(i) Conduct a fair, orderly, and impartial hearing within 90 days of the request for a hearing;

(ii) Consider all relevant evidence, explanation, comment, and argument submitted; and

(iii) Notify the affected entity in writing within 90 days of completion of the hearing of his or her decision and order. Such an order is a final EPA action subject to judicial review.

(4) If EPA determines that the public health, interest, or welfare warrants immediate action to suspend the certification of any individual or firm prior to the opportunity for a hearing, it shall:

(i) Notify the affected entity of its intent to immediately suspend certification for the reasons listed in paragraph (h)(1) of this section. If a suspension, revocation, or modification notice has not previously been issued, it shall be issued at the same time the immediate suspension notice is issued.

(ii) Notify the affected entity in writing of the grounds upon which the immediate suspension is based and why it is necessary to suspend the entity's accreditation before an opportunity for a hearing to suspend, revoke, or modify the individual's or firm's certification.

(iii) Notify the affected entity of the commencement date and duration of the immediate suspension.

(iv) Notify the affected entity of its right to request a hearing on the immediate suspension within 15 days of the suspension taking place and the procedures for the conduct of such a hearing.

(5) Any notice, decision, or order issued by EPA under this section, transcript or other verbatim record of oral testimony, and any documents filed by a certified individual or firm in a hearing under this section shall be available to the public, except as otherwise provided by section 14 of TSCA or by part 2 of this title. Any such hearing at which oral testimony is presented shall be open to the public, except that the Presiding Officer may exclude the public to the extent necessary to allow presentation of information which may be entitled to confidential treatment under section 14 of TSCA or part 2 of this title.



U. S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR FIRMS TO CONDUCT LEAD-BASED PAINT ACTIVITIES

Important: This Certification Letter will serve as a firm's application to EPA for certification to perform lead-based paint activities. Consult the Instructions for Firms Applying for Certification to Conduct Lead-Based Paint Activities and the official requirements reprinted there to complete this form. Individuals should use the Application for Individuals instead of this form. Please type or print responses in black or blue ink only.

A. Type(s) of Certified Individuals Employed

Select one of the following. Also select the appropriate discipline(s) below.

- Checkboxes for Certification application, Replacement of a lost certificate, Certification renewal

Official Use Only box

For information on EPA and other lead programs, see the web site: http://www.epa.gov/lead/

Indicate the type(s) of certified individuals the firm intends to employ (check one to five boxes).

- Checkboxes for Inspector, Supervisor, Risk Assessor, Project Designer, Abatement Worker

B. Applicant Information

Name of Firm: \_\_\_\_\_

Business Address: \_\_\_\_\_ Street Address, Suite No. (Please, no P.O. Box)

City State Zip Code

Mailing Address: \_\_\_\_\_ (if different from above) Address City State Zip Code

Name of Attesting Individual: \_\_\_\_\_ Last First Middle Title

Firm's Phone: (\_\_\_\_) \_\_\_\_-\_\_\_\_ ext. \_\_\_\_ Attesting Individual's Phone: (\_\_\_\_) \_\_\_\_-\_\_\_\_ ext. \_\_\_\_

C. Professional Certifications

Does the firm hold current permits, licenses, certifications, or registrations in the lead-based paint activity field in any area or region? Yes No (circle one)

If yes, please fill in the following blanks, one line for each permit, license, certification, or registration held. Attach additional sheets of paper if necessary. For more information, refer to the instructions and the official requirements (40 CFR § 745.226(f)) reprinted there.

Table with 4 columns: Discipline in which certification held, Area/Region (list State, Territory, or Indian Tribe name), Certification/Identification Number, Date received

D. Lead-Based Paint Activity Violations

Does the firm have any past, present, or pending lead-based paint activity violations of EPA, State, Territory, or Indian Tribe regulations? Yes No (circle one)

If yes, please attach additional paper with a written explanation.

CERTIFICATION LETTER (CONTINUED)

E. Areas/Regions

Please list all the areas or regions in which you intend to perform lead-based paint activities. You will be eligible for certification to work only in those areas or regions. Attach additional sheets of paper if necessary.

The fee that you must pay is affected by the number of areas or regions in which you plan to conduct lead-based paint activities. See the FEE SHEET, which was included with your application form, to determine the fee you must pay with your application.

Four horizontal lines for listing areas or regions.

F. Certification Statement

Fill in the blanks in the following statement as indicated.

\_\_\_\_\_ attests that \_\_\_\_\_  
Name of Firm Name of Firm

shall only employ appropriately certified employees to conduct lead-based paint activities.

\_\_\_\_\_ will encourage all employees to maintain their certifications  
Name of Firm  
according to 40 CFR § 745.226(e) and conduct lead-based paint activities only in those areas in which the employee has received specific certification. \_\_\_\_\_ and its employees will follow  
Name of Firm

the work practice standards in 40 CFR § 745.227 for conducting lead-based paint activities at all times.

Privacy Act Statement: This statement is provided pursuant to the Privacy Act of 1974, 5 U.S.C. §552a. The authority for collecting this information is 40 C.F.R. Part 745, and 15 U.S.C. §§2682 and 2684. The information collected on this form will be used to establish the applicants eligibility for certification to conduct lead-based paint activities in target housing and child-occupied facilities. Disclosure of this information is voluntary, however, the failure to provide this information may delay or prevent an applicant's certification. This information may be disclosed in appropriate and limited circumstances to: EPA employees, contractors, grantees or others when performing duties that are compatible with the purpose for which this information is collected and when this information is necessary to complete the task; a member of Congress in response to a request made with your consent and on your behalf; to appropriate law enforcement agencies responsible for investigating, enforcing, prosecuting or implementing specific statutes, codes or regulations and this information is relevant to that responsibility; an appropriate adjudicative body when such disclosure is compatible with the purpose for which this information is collected and the EPA or the United States has an interest in the proceeding; and the Department of the Treasury, the General Services Administration, the General Accounting Office and other Federal, State, and Local Agencies for authorized activities related to this information.

I hereby attest and affirm that the information included on this application, including any attachments, is true and accurate to the best of my belief and knowledge. I acknowledge that any certification issued pursuant to this application, including any attachments, will be subject to revocation if issuance was based on incorrect or inadequate information that materially affected the decision to issue the certification.

\_\_\_\_\_  
Attesting Individual's Signature

\_\_\_\_\_  
Date Signed

Before you mail your application, check to make sure that you have:

- Filled out all sections of the application
- Signed and dated the application
- Enclosed the appropriate certification fee(s) -- see the FEE SHEET for more information
- Made a copy of your application for your files

Mail original completed application and supporting materials in one package to:

U.S. Environmental Protection Agency  
OPPTS/ Lead-Based Paint Activities Certification Request  
401 M Street, SW (Mail Code: 7404)  
Washington, D. C. 20460

## FEE SHEET

Below are the lead training and certification fees effective June 11, 1999. If you have questions about the fees or the application process please call the National Lead Information Center (NLIC) at 1-800-424-LEAD. See the next page for several examples of fee payments.

Fee payments should be made payable to the *U.S. Environmental Protection Agency*. Checks should include the name, address, and either the social security or green card number of the applicant. Also, include the statement "Lead Program" on the check. Fee payments should be mailed to the following address:

U.S. Environmental Protection Agency  
 Washington Financial Management Center  
 Lead Program User Fees  
 P.O. Box 360277M  
 Pittsburgh, PA 15251

- **Certification examination fee.** Individuals required to take a certification exam in accordance with 40 CFR 745.226 will be assessed a fee of \$70 for each exam attempt.
- **Multi-jurisdiction registration fee.** An individual, firm, or training program certified or accredited by EPA may wish to provide training or perform lead-based paint activities in additional EPA-administered jurisdictions. A fee of \$35 per discipline will be assessed for each additional EPA-administered jurisdiction in which an individual, firm, or training program applies for certification, re-certification, accreditation, or re-accreditation. For purposes of this multi-jurisdiction registration fee, an EPA-administered jurisdiction is either an individual state without an authorized program or all Indian Tribes without authorized programs that are within a given EPA Region.
- **Lost identification card or certificate.** A \$15 fee shall be charged for replacement of an identification card or certificate.
- **Certification and accreditation fees.** Initial and renewal certification and accreditation fees are specified in the following table:

Training Program		Accreditation <sup>1</sup>	Re-accreditation <sup>1</sup> [every 4 years, see 40 CFR 745.225(f)(1)]
<i>Initial Course</i>	Inspector	\$2,500	\$1,600
	Risk assessor	\$1,760	\$1,150
	Supervisor	\$3,250	\$2,050
	Worker	\$1,760	\$1,150
	Project designer	\$1,010	\$710
<i>Refresher Course</i>	Inspector	\$1,010	\$710
	Risk assessor	\$1,010	\$710
	Supervisor	\$1,010	\$710
	Worker	\$1,010	\$710
	Project designer	\$640	\$490

Lead-based Paint Activities-Individual		Certification <sup>1</sup>	Re-certification <sup>1</sup> [every 3 or 5 years, see 40 CFR 745.226(e)(1) for details]
Inspector		\$400	\$350
Risk assessor		\$520	\$420
Supervisor		\$470	\$390
Worker		\$280	\$240
Project designer		\$470	\$390

Lead-based Paint Activities-Firm		Certification <sup>1</sup>	Certification Renewal <sup>1</sup> [every 3 years, see 40 CFR 745.226(f)(7) for details]
		\$540	\$430

**EXAMPLES OF FEE AMOUNTS**

- 1) Individual applying for initial certification as a Risk Assessor in an EPA administered state.  
Note: \$70 examination fee will be collected separately at the examination site

Initial Risk Assessor Certification Fee	<u>\$520</u>
---	--------------

Total Amount Due	\$520
------------------	-------

- 2) Individual applying for initial certification as a Worker in 4 EPA administered states

Initial Worker Certification Fee	\$280
Worker multi-jurisdiction fee [3*35=\$105]	+ <u>\$105</u>

Total Amount Due	\$385
------------------	-------

- 3) Training program applying for initial worker and supervisor accreditation in an EPA administered state.

Initial Worker Accreditation Fee	\$1,760
Initial Supervisor Accreditation Fee	+ <u>\$3,250</u>

Total Amount Due	\$5,010
------------------	---------

- 4) Training program applying for initial worker and supervisor accreditation in 4 EPA administered states.

Initial Worker Accreditation Fee	\$1,760
Worker multi-jurisdiction fee [3*35=\$105]	\$ 105
Initial Supervisor Accreditation Fee	\$3,250
Supervisor multi-jurisdiction fee [3*35=\$105]	+ <u>\$ 105</u>

Total Amount Due	\$5,220
------------------	---------

- 5) Training program applying for initial and refresher worker accreditation in 4 EPA administered states.

Initial Worker Accreditation Fee	\$1,760
Initial Worker multi-jurisdiction fee [3*35=\$105]	\$ 105
Refresher Worker Accreditation Fee	\$1,010
Refresher Worker multi-jurisdiction fee [3*35=\$105]	+ <u>\$ 105</u>

Total Amount Due	\$2,980
------------------	---------



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

NOV 26 1999

OFFICE OF  
POLICY

Dear Small Entity Representative (see Attachment 1):

The Environmental Protection Agency (EPA) is currently developing a regulatory proposal entitled **Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements Requirements**. Officials from EPA's Office of Pollution Prevention and Toxic Substances (OPPTS) have previously contacted you and other potentially affected parties about this rule, and initial outreach meetings were held on September 22 and 23, 1999.

As EPA's Small Business Advocacy Chair under RFA/SBREFA, I have convened a Small Business Advocacy Review Panel for this rulemaking under the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA). Under RFA/SBREFA, a Federal Small Business Advocacy Review Panel collects the advice and recommendations of representatives of small entities that may be affected by a proposed rule and reports their comments as well as the Panel's findings on issues related to the key elements of an initial regulatory flexibility analysis (IRFA) under Section 603 of the RFA. The Panel includes representatives from the Small Business Administration, the Office of Management and Budget, and EPA's Office of Pollution Prevention and Toxic Substances (listed in Attachment 1). The Panel will consider your oral and written comments and prepare a report on the rulemaking to Carol Browner, Administrator of EPA, on the potential small entity impacts of the rule and on potential ways to reduce those impacts. The report will be part of the record for deciding the content of the proposed rule. Of course, after publication of the proposed rule in the *Federal Register*, you will have an additional opportunity to submit comments during the standard public comment period.

The Panel is interested in hearing your views on ways EPA could mitigate any adverse impact complying with this rule might have on your business, while still achieving the environmental objectives of the regulation. **Accordingly, on behalf of the SBREFA Panel, I invite your participation in a meeting with the Panel Friday, December 3, 1999 from 1:00-4:00 p.m. EST** (Please see attachment 2 for meeting details, RSVP form, and teleconference information). The Panel will consider comments you may have already submitted to the Office of Pollution Prevention and Toxic Substances and to the Panel, but this is an opportunity for you to communicate directly with the Panel members to provide comments orally during the meeting.

OPPTS has summarized all the small entity representatives' oral comments in a convening document for the Panel. The Panel will assemble and attach all your written comments to the report the Panel will prepare for the Administrator. If you are satisfied with your remarks to date, you need not add anything else. Please be assured that the Panel will fully

consider the record already assembled. If you have any additional written comments, please send them to me care of Jennifer Greenamoyer of my staff\* and I will see that all Panel members receive copies. **To ensure that your written input is received in time to be considered by the Panel, I am requesting that you provide any new or remaining written comments by December 17, 1999.**

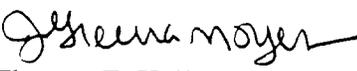
The Panel is interested in your feedback on all issues relating to the key elements of an IRFA as specified by RFA/SBREFEA, which are:

- a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply.
- projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record.
- an identification, to the extent practicable, of all other relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule.
- any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

**To help the Panel in their consideration of these elements, we are also specifically requesting comment on several options listed in Attachment 3.** To assist you in providing input, Attachments 4 through 9 include information on potential risk and costs of these preliminary options.

On behalf of this SBREFEA Panel, I thank you for investing your time and effort to help us achieve the goal of RFA/SBREFEA, which is to minimize significant burdens on regulated small entities while achieving the public purpose to be served by regulation. I look forward to meeting with you on Friday, December 3, and hearing your comments and recommendations.

Sincerely,

  
for Thomas E. Kelly  
Small Business Advocacy Chair

\*Send comments c/o:

Jennifer Greenamoyer  
Environmental Protection Agency  
401 M Street, SW  
MC 2136  
Washington, DC 20460

Phone: (202) 260-7829  
FAX: (202) 260-5478  
e-mail: greenamoyer.jennifer@epa.gov

(For courier deliveries use room 409 West Tower)

- Attachment 1: List of Panel Members and Small Entity Representatives
- Attachment 2: Information on December 3 Outreach Meeting
- Attachment 3: Potential Options and Approaches
- Attachment 4: SBREFA Outreach Questions & Answers
- Attachment 5: Overview of Potential Risk
- Attachment 6: Overall Estimated Costs of Various R&R Rule Options
- Attachment 7: Per Unit Estimated Costs of Various R&R Approaches
- Attachment 8: Recent Studies Addressing the Effectiveness of Cleanup Procedures
- Attachment 9: Comparison of Pre- and Post-1960 Housing Stock

Also Enclosed:

- National Center's Draft Issues Paper
- R&R Study Summary, August 1999
- Previous options paper distributed in September 1999 entitled *Options and Approaches for Renovation and Remodeling Regulations*

cc: John T. Spotila, OMB  
Jere W. Glover, SBA  
Bill Sanders, OPPTS

## Attachment 1: List of Panel Members and Small Entity Representatives

### LIST OF SBREFA PANEL MEMBERS

Jere W. Glover	Small Business Administration
John T. Spotila	Office of Management and Budget
Bill Sanders	EPA Office of Pollution Prevention and Toxic Substances
Thomas E. Kelly	EPA Small Business Advocacy Chair

### LIST OF SMALL ENTITY REPRESENTATIVES

Name and Address	Activity	# of Employees / Sales Volume	Recommended by:
Jeff Hurst Hurst Total Home, Inc. 2852 Haig Avenue Kettering, OH 45419 ph: 937-296-1133 fax: 937-296-1134	Remodeling Contractor	Less than \$1 million	National Association of the Remodeling Industry (NARI)
Brandt Domas Domas & Associates, Inc. 1344 West Cedar Avenue Denver, CO 80233-1731 ph: 303-733-7186 fax: 303-733-2802	Painting and Decorating Contractor	Less than \$7 million	Painting and Decorating Contractors of America (PDCA)
Paul Corey Paul J. Corey Painting and Decorating 769 East Street Dedham, MA 02026 ph: 781-326-4225 fax: 781-320-9062	Painting and Decorating Contractor	Less than \$250,000	Painting and Decorating Contractors of America (PDCA)
Bob Hanbury House of Hanbury Builders 109 Stamm Road Newington, CT 06111 ph: 860-666-1537 fax: 860-665-7815	Renovation Contractor	Less than 2 million	National Association of Home Builders (NAHB)
Bill Stack Koch Brothers Decorating 6752 Olive Boulevard St. Louis, Missouri 63130 ph: 314-862-8383 fax: 314862-9839	Finishing Contractor	Less than \$7 million	Finishing Contractors of America (FCA)

Name and Address	Activity	# of Employees / Sales Volume	Recommended by:
Keith Farnham K&R Christopher, Inc. 1045 N. Spring Elgin, Illinois 60120 ph: 847-741-0437 fax: 847-741-9695	Finishing Contractor	Less than \$4 million	<b>Finishing Contractors of America (FCA)</b>
Emma Brown Handypersons, Inc. 543 Howard Street San Francisco, CA 94105-3013 ph: 415-957-0798 fax: 415-495-7283	Maintenance and Renovation Contractor	Less than \$7 million	<b>United Brotherhood of Carpenters and Joiners of America (UBCJA)</b>
Fred Brenner General Plumbing Corp. 436 Keap Street Brooklyn, NY 11211 ph: 718-782-4400 fax: 718-782-2405	Plumbing Contractor	Less than \$7 million	<b>National Association of Plumbing, Heating, and Cooling Contractors</b>
Fred Quercetti 799 Montclair Drive Claymont, DE 19703 ph: 302-798-0635	Multi-family Property Owner	Less than \$1.5 million	<b>National Multi Housing Council</b>
Frank Pietranton/Chris Wallis Peir Assoc. Real Estate 2132 Wisconsin Ave NW Washington, DC 20007 ph: 202-337-8500 fax: 202-337-1129	Multi-family Property Owner	Less than \$1.5 million	<b>Institute of Real Estate Management</b>
Richard Baker Baker Environmental Consulting 7941 Westgate Street Lexana, KS 66215-2636 ph: 913-541-0220 fax: 913-541-0457	Trainer and Risk Assessor/Inspector	Less than \$7 million	N/A
Burt Olhiser JEFFCO Painting and Coating, Inc. 1260 Railroad Ave., Bldg. 750 Vallejo, CA 94592 ph: 707-556-1900 fax: 707-556-1907	Painting and Decorating Contractor	Less than \$7 Million	SBA in response to EPA's formal notification

Name and Address	Activity	# of Employees / Sales Volume	Recommended by:
Kevin Nolan Nolan Painting, Inc. 118 West Hillcrest Ave. Havertown, PA 19083 ph: 610-642-1415 fax: 610-642-7856	Painting and Decorating Contractor	Less than \$7 Million	SBA in response to EPA's formal notification
Rhonda Daniels National Association of Home Builders 1201 15 <sup>th</sup> Street, NW Washington, DC 20005 ph: 202-822-0328 fax: 202-822-0390			SBA in response to EPA's formal notification
Dave Potts National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814 ph: 301-657-3110 fax: 301-215-4500			SBA in response to EPA's formal notification
Claudia Harris National Association of Plumbing, Heating, and Cooling Contractors 180 S. Washington St. Falls Church, VA 22046 ph: 1-800-533-7694 fax: 703-273-7442			SBA in response to EPA's formal notification
Eileen Lee National Multi Housing Council 1850 M Street, NW Suite 540 Washington, DC 20036 ph: 202-659-3381 fax: 202-775-0112			SBA in response to EPA's formal notification
David Keene Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850 ph: 301-869-5800 fax: 301-990-9690			SBA in response to EPA's formal notification

## **Attachment 2: Information for Meeting with SBREFA Panel**

For your convenience, and in order to support the Panel's deliberations, we have scheduled a meeting that will allow you to address the Panel directly in the company of your industry colleagues. You may use this as the opportunity to deliver your comments, or you may choose to provide written comments in lieu of, or in addition, to your verbal comments. All members of the SBREFA Small Business Advocacy Review Panel will participate in this meeting. You can also participate via teleconference at the number listed below.

Date: December 3, 1999

Time: 1:00pm - 4:00pm

Location: Room 526 East Tower  
EPA Waterside Mall  
401 M Street SW  
Washington, DC 20460  
(Enter through East Tower Main Entrance - behind Safeway)

Teleconference line call in number: (202) 260-7280, access code 9243#.

**To assure a productive meeting, if you plan to attend in person or by telephone, please take a moment to fill out the enclosed FAX form on the next page of this attachment and send it ASAP to Jennifer Greenamoyer (I suggest faxing it to 202-260-5478). Please also call Jennifer at 202-260-7829 with any questions about meeting location or logistics.**



## Facsimile Transmittal Cover Sheet

U.S. Environmental Protection Agency  
 401 M Street, SW  
 Washington, D.C. 20460

FAX TO:

Jennifer Greenamoyer

FAX NUMBER:

(202) 260-5478

PHONE NUMBER:

(202) 260-7829

LOCATION: Office of Small Business Advocacy Chair

DATE:

NUMBER OF PAGES INCLUDING THIS COVER SHEET:

MESSAGE

Please include me on the list of likely participants for the SBREFA Small Business Advocacy Review Panel meeting for TSCA 402(C) Renovation and Remodeling Proposed Rule on December 3, 1999.

- I will attend in person at Washington, DC location.  
 I will participate via conference call.

Name:

Representing:

Telephone Number:

## Attachment 3: Potential Options and Approaches

### Overview

In response to the health hazards arising from lead exposure, Congress passed the Residential Lead-Based Paint Hazard Reduction Act (Title X) in 1992. This law directs EPA to develop regulations under the Toxic Substances Control Act (TSCA) Section 402(a) and create standards for conducting lead-based paint activities that include abatement. EPA has already promulgated final regulations for lead-based paint activities in target housing and child-occupied facilities (40 CFR Part 745 Subpart L). These regulations require that individuals conducting lead-based paint inspections, risk assessments, and abatements be certified and that the work be performed according to specified work practice standards.

TSCA Section 402(c) directs EPA to address renovation and remodeling activities by first conducting a study (see accompanying study summary titled *Lead Exposure Associated with Renovation and Remodeling Activities; Final Summary Report*) of the extent to which persons engaged in various types of renovation and remodeling activities are exposed to lead in the conduct of such activities or disturb lead and create a lead-based paint hazard on a regular or occasional basis. Section 402(c) further directs the Agency to revise the lead-based paint activities' regulations (40 CFR Part 745 Subpart L) to include renovation or remodeling activities that create lead-based paint hazards. To determine which contractors are engaged in such activities the Agency is directed to utilize the results of the study and consult with the representatives of labor organizations, lead-based paint activities' contractors, persons engaged in remodeling and renovation, experts in lead health effects, and others.

The Agency is currently developing a Renovation and Remodeling (R&R) proposed rule. The Agency has identified eight major components of a proposed regulation addressing renovation and remodeling activities. They are applicability, firm certification, individual training and certification, accreditation, work practice standards, prohibited practices, exterior clearance, and interior clearance. This paper outlines EPA's pros and cons of the various alternatives under each option.

### Definitions

It will be important to note some key regulatory definitions applicable to this rulemaking to ensure we have the same basis/understanding when discussing the options. These definitions are given below:

*Child-occupied facility* means a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, six years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least three hours and the combined weekly visit lasts at least six hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day-care centers, preschools and kindergarten classrooms.

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

*Lead-based paint free housing* means target housing that has been found to be free of paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight.

*Lead-based paint hazard* means any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as identified by the Administrator pursuant to TSCA section 403.

*Target housing* means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age six years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0-bedroom dwelling.

*Emergency renovation operations* means renovation activities, such as operations necessitated by non-routine failures of equipment, that were not planned but result from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, or threatens equipment and/or property with significant damage.

*Renovation* means the modification of any existing structure, or portion thereof, that results in the disturbance of painted surfaces, unless that activity is performed as part of an abatement as defined by this part (40 CFR 745.223). The term renovation includes (but is not limited to): the removal or modification of painted surfaces or painted components (e.g., modification of painted doors, surface preparation activity (such as sanding, scraping, or other such activities that may generate paint dust)); the removal of large structures (e.g., walls, ceiling, large surface replastering, major re-plumbing); and window replacement.

### **Exemptions**

It will also be important to note some key regulatory exemptions applicable to this rulemaking to ensure we have the same basis/understanding when discussing the options. These exemptions are given below:

*Lead based paint free.* This regulation will not apply to renovations in which a written (lead-based paint free) determination has been made. Lead-based paint free means target housing or child-occupied facilities in which a written determination has been made by an inspector (certified pursuant to either Federal regulations at §745.226 or a State or Tribal certification program authorized pursuant to §745.324) that the components affected by the renovation are free of paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight, where the renovator has obtained a copy of the determination.

*Homeowner exemption.* This regulation would not apply to persons who perform these activities within residential dwellings that they own, unless the residential dwelling is occupied by a person or persons other than the owner or the owner's immediate family while these activities are being performed

## Components

### 1. *Applicability*

The renovation and remodeling proposed rule would apply to individuals and firms conducting renovation, as previously defined, in all or certain housing built before 1978. The statute limits the Agency from setting requirements on renovation and remodeling activities on housing built after 1978. The year 1978 is important because on February 27, 1978 the Consumer Product Safety Commission declared that paints, for consumer use, that contain lead in excess of 0.06 percent of weight are banned hazardous products (16 CFR 1303).

Under all of these options, the regulated parties would include residential rental property owners and managers, general contractors, and special trade contractors such as painters, plumbers, carpenters, and electricians conducting renovation on the applicable housing stock.

Possible options include:

- Option 1: All pre-1978 housing
  - Pro
    - High probability that post 1978 homes do not have lead-based paint, since it was banned in 1978. Therefore, targets full spectrum of housing market potentially containing lead-based paint.
    - 1978 is consistent with HUD guidelines and EPA lead abatement requirements.
    - Establishes one federal standard that is easy for contractors to remember and follow.
  - Con
    - Potential compliance costs are higher since this option is more inclusive.
    - The majority of homes built between 1960 and 1978 are free of lead-based paint.
    - Age of housing may not be known.
- Option 2: All pre- 1960 housing
  - Pro
    - Scope of the rule is more targeted to the housing stock with the greatest potential to have LBP.
    - Potential lower training, certification, and compliance costs since fewer homes would be affected by the rule.
  - Cons
    - Owners of post-1960 housing, containing lead-based paint, may falsely assume no risks are associated with dust resulting from R&R activities.

- Inconsistent with HUD guidance and EPA's Abatement requirements (TSCA 402 (a)), both of which are applicable to pre-1978 housing.
- An R&R contractor may expose themselves to greater liability risk if LBP is present in post 1960 housing and they do not take measures (i.e., certain work practices) which limit the exposure and spread of LBP in dust.
- Age of housing may not be known.
- Option 3: Rental housing only versus all housing
  - Pro
    - Occupants of rental housing have no choice in controlling their exposure to the potential hazards from LBP dust from renovation and remodeling activities.
    - Lower income families, who are more likely to be in rental units, are at higher risk of lead poisoning.
    - Lowers overall compliance costs by limiting the regulated housing market.
    - Provides options for owner occupied housing. Would likely provide a supply of qualified contractors and each homeowner would be able to decide if avoiding the R&R lead risk is worth the additional compliance cost of a lead-safe job.
  - Con
    - Potential risks still exist in owner occupied housing
    - Risk to future tenants of owner occupied housing, especially in the case of renovations at sale, and to unsuspecting visitors of owner occupied housing (eg. grandchildren).
    - Owners may be unaware of potential risks associated with lead.

In addition, the Agency is also considering two additional exemptions for the applicability of this rulemaking which would apply to minor repair or maintenance that disturbs two square feet or less of painted surfaces, and emergency renovation projects as described below:

- Exemption 1: Minor repair or maintenance. A 2 ft<sup>2</sup> per component de minimis level is being considered to be adopted from the June 1995 Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing as a means of differentiating between large-scale renovation activity and minor maintenance activities which pose a lower likelihood of creating a lead hazard. This same de minimis level has also been used by the National Institute of Building Sciences (NIBS) in its draft Regulatory Models for Lead Poisoning Prevention report. This draft report is the result of a consensus process involving both public (e.g., Federal and State governments) and private (e.g., landlord associations, builders) sectors. This exemption attempts to provide a common sense approach which is consistent with standard industry practices (as captured in the aforementioned guidelines and the de minimis level's use in the NIBS report), along with clear guidance and direction to the regulated community, as to which renovation activities will trigger the requirements of this rule.
  - Pro
    - May reduce some of the compliance costs for very small renovation and remodeling jobs.

- Consistent with exemptions in the pre-renovation disclosure rule (TSCA 406(b)).
- Con
  - Potential risks still exists from small disturbances where LBP exists. For example, suppose renovation work is done on only 1 square foot of painted surface and all the paint inside that square foot is turned into dust by sanding or some other work. If the paint contained only 1 mg/cm<sup>2</sup> of lead (the smallest amount to still be considered lead-based paint) and the dust produced was spread over a 100 ft<sup>2</sup> area, there would be about 9,300 mg/ft<sup>2</sup> of leaded dust present. This is nearly 100 times greater than existing EPA floor clearance guidance of 100 mg/ft<sup>2</sup>.
  - 2 ft<sup>2</sup> may also include many jobs for which a lesser degree of information, such as that contained in a brochure like “Protect Your Family,” would be more appropriate.
- Exemption 2: Emergency renovation projects. EPA recognizes that emergency situations occur which require renovation activities to be conducted expeditiously. Such emergencies would typically involve structural or equipment failure that could lead to endangerment to public health or substantial property damage if not repaired immediately. To address these situations, EPA may included a category of Emergency renovation operations that are exempted from the requirements of this rule. However, once the portion of the repair that addresses the source of the emergency is completed the justification for the exemption from the rule is no longer operative. Therefore, any additional renovation activity needed to return the renovation work area to its pre-emergency condition would likely subject to the requirements of the rule.
  - Pro
    - May reduce some of the overall compliance costs.
    - Consistent with exemptions in the pre-renovation disclosure rule (TSCA 406(b)).
    - Streamlines response to emergency situations.
  - Con
    - Potential risks still exists from small disturbances where LBP dust exists.

## 2. Certification of Firms

The regulation may require a firm to be certified by EPA or an authorized state or tribal government when performing renovation and remodeling activities on housing included in the scope of the proposed rule. Firm certification will likely require, as part of the application, a statement that the firm will; 1) employ appropriately trained and/or certified individuals to conduct R&R activities, 2) follow applicable work practice standards. Note: If a contractor performs renovation and remodeling work only on newer homes, such as those built after 1978, then, they would not be required to be certified.

Possible options include:

- Option 1: Certification of all renovation and remodeling firms
  - Pro
    - Firms would have the appropriate training and knowledge of work practices for renovation and remodeling activities where LBP exists.
    - Establishes a higher level of credibility for R&R firms That is, consumers will be able to distinguish between lead-safe certified firms and non-certified firms
    - Improves the Agency's and/or authorized States and Tribal Governments ability to enforce these requirements.
    - Certification process could be quick, simple and inexpensive.
  - Con
    - Higher compliance costs due to the administration of such a certification program.
    - Impact will be higher (as a percentage of revenue) for the smallest firms.
- Option 2: Certification of only those firms involved in large-scale surface preparation or demolition activities
  - Pro
    - Limits certification requirements to those projects where the potential exists to produce the largest quantities of LBP dust
    - Lowers compliance costs
    - Little benefit may accrue from certification of additional firms
  - Con
    - Potential risks from LBP still exists in smaller scale R&R work.
    - Limits the enforcement ability for the Agency's or an authorized State or Tribal government.
    - Many firms would likely conduct a "major lead disturbing event" at least once in a while. This is especially true because the "major" threshold is relatively low (easy to cross).
    - A firm may not realize the dust generating potential of a job or the scope may be changed significantly during the course of work requiring certification.
    - Difficult to clearly define "large scale"
- Option 3: No firm certification
  - Pro
    - Lower compliance costs
    - Firm certification may not be necessary, as long as workers are trained (similar to OSHA standards)
  - Con
    - Limits the enforcement ability for the Agency or an authorized State or Tribal government.
    - A firm with significant training and experience in dealing with lead-based paint will lack credentials which consumers could use to evaluate the firm's lead-safe expertise.

- Exemption #1: for specialty contractors such as plumbers and electricians who do not regularly perform R&R activities disturbing more than 2 ft<sup>2</sup>.
  - Pro
    - Reduce number of contractors affected by the rulemaking reducing overall compliance cost.
  - Con
    - Inconsistent with statutory directive to regulate activities which produce lead hazard.
    - Owners may falsely assume no risks of lead hazards are associated with this work.

### 3. *Training and Certification of Individuals*

EPA may require all or some individuals engaged in regulated renovation and remodeling activities to complete a training course and possibly become certified by EPA or an authorized state. The training could be required to be obtained through an accredited training provider or possibly by the employer (similar to OSHA training requirements). Certification requirements would likely include successfully completing training in the appropriate discipline and submitting a formal application. Re-certification may also be required to keep abreast of the most current technologies and practices.

Possible options include:

- Option 1: Training and certification of all individuals performing regulated renovation and remodeling activities.
  - Pro
    - Ensures workers have the appropriate training and knowledge of work practices for renovation and remodeling activities where LBP exists.
    - Provides credentials for those who are trained in performing R&R activities on housing with LBP
    - Enhances the enforcement ability of the Agency and/or authorized State or Tribal government.
    - In the case of the dust testing technician, EPA abatement regulations require, and the HUD guidelines recommend that only certified personnel conduct dust testing.
  - Con
    - Higher compliance costs for training and certification of all R&R workers
    - Firms generally pay training and certification costs. However, with the high worker turnover in the industry, firms may not be able to recover their investment in the worker. Some workers are hired on an extremely short term basis (daily, weekly, a job) which exacerbates the problem.
    - Infrastructure for training/certification may not be available in all areas.

- Option 2: Training and certification of supervisors only
  - Pro
    - Lower compliance costs for training and certification than with option 1.
    - Supervisors are responsible for directing and designing many of the most important work practices. They can specify how the work should be done.
    - Supervisors have lower turnover than workers
    - Supervisors responsible for other health and safety aspects of a project.
  - Con
    - Supervisors may need to be present throughout all projects and provide on-the-job training for workers without training
    - Workers may have limited knowledge of appropriate work practices.
- Option 3: Require training for all individuals performing regulated renovation and remodeling activities (no certification of individuals).
  - Pro
    - Lower compliance cost for certification fees than with option 1
    - Results in a widely held/accepted knowledge about lead hazards across the industry.
    - Avoids overwhelming administrative burden (to states and EPA) of administering a certification program for an estimated 1.5 million workers.
    - Training could be union based for some workers
    - Training could be combined with other OSHA training regulations (also required for all employees).
  - Con
    - No official credentials for training of workers and/or supervisors
    - Limits the enforcement ability of the Agency and/or State or Tribal governments
- Option 4: No training and certification requirements
  - Pro
    - Lower compliance costs with no training and certification requirements
  - Con
    - Increased potential risks from performing work practices not in accordance with methods known to reduce/limit the exposure and dispersion of LBP dust
    - Training can function as a means of compliance assistance, providing information regarding specific regulatory provisions to affected entities. Without such mechanism this delivery would be far more difficult.
    - No official credentials for training of workers and/or supervisors
    - Limits the enforcement ability of the Agency and/or State or Tribal governments

#### 4. *Accreditation of Training Providers*

EPA may require entities that train renovation and remodeling workers to obtain accreditation from EPA or an authorized state. Accreditation for a training program may involve review and approval of the following; training materials, instructor and student manuals, course agenda; a description of the facilities and equipment to be used; a description of the activities and procedures that will be used for conducting the assessment of hands-on skills for each course and a quality control plan. Some of the requirements for the accreditation of training programs may involve training managers with experience to conduct courses that provide hands-on training and to implement a quality control plan. To become accredited and offer lead-based paint course instruction training programs may need to ensure that their courses include specific topics and have a minimum amount of training hour requirements.

The basic options are:

- Option 1: Require accreditation of all R&R training providers
  - Pro
    - Provides credential to training providers
    - Ensures quality control for training programs and provides consistency throughout the country.
    - People taking training from an accredited provider get more value for their training dollar.
  - Con
    - Higher compliance costs
    - May limit the availability of trainers
- Option 2: No training provider accreditation. Instead, use the OSHA training approach, require firms to provide and document the training of their employees in key areas specified by the Agency
  - Pro
    - Lower compliance costs
    - Training could be customized for each firm
  - Con
    - No quality control
    - Poor training quality possible

#### 5. *Work Practice Standards*

The current regulations for lead-based paint activities contain specific prescriptive work practice standards that take into account reliability, effectiveness, and safety. EPA could establish prescriptive work practice standards for renovation and remodeling activities. Alternatively, EPA could establish performance-based standards, allowing renovation and remodeling contractors the flexibility to determine how to meet the performance standards.

The four key elements of work practice standards include the following: setup (containment), restricted practices, cleanup, and clearance. Two of these issues, restricted practices and

clearance, are discussed separately in this document. Therefore, this discussion of work practices will focus on issues pertaining to setup (containment) and cleanup.

A prescriptive regulation would require contractors to follow specific procedures such as those described in either the HUD guidelines or the Draft Technical Manual prepared by the Agency titled "Lead Dust Minimization Work Practices for Renovation, Remodeling, and Repainting." A performance based regulation would establish standards which would allow contractors to choose cost effective techniques to accomplish such standards. Examples of performance based standards may likely include the following:

- All persons not directly engaged in work operations shall be excluded from the work area when work is in progress and until such time the area is properly cleaned to preclude incidental exposure of occupants or other persons. Signs, barriers or other appropriated means necessary to effect the security of the work areas shall be used.
- All objects which may be contaminated by lead dust or debris from the work activities shall be removed or sufficiently covered so as to prevent their contamination.
- The Work Area shall be sufficiently isolated from adjacent interior spaces of the dwelling by plastic sheeting or other appropriate impermeable material to prevent contamination of said adjacent spaces.
- Exterior renovations shall confine any generated lead dust or debris to the work area in order to prevent the migration of generated lead dust or debris to an adjacent property.
- The ground shall be covered during exterior renovations with tarpaulin or other appropriate impermeable material extending out from the edge of the structure a sufficient distance to collect falling paint debris.
- All surfaces which may have become contaminated with lead dust or debris shall be cleaned of contamination at the conclusion of the project. Acceptable cleaning methods may include HEPA-filtered vacuuming, wet wiping or washing using any general household detergent, and other forms of low-disturbance mechanical transfer.

Note: Where vacuuming is employed the use of shop vacuums will not be allowed and the Agency will likely require the use of HEPA vacuum equipment for two reasons:

First, HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. Vacuuming with conventional vacuum machines is often ineffective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. Studies have revealed that fine dust air levels are exceedingly high when a standard portable vacuum was used.

Second, the OSHA lead standard requires the use of HEPA vacuum equipment. 29 CFR 1926.62

(h)(4) states, “where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters.” This standard applies to all construction work where an employee may be occupationally exposed to lead (this is not dependent on the size of a job or the concentration of lead). Examples of construction work include: demolition or salvage of structures where lead is present; removal or encapsulation of materials containing lead; and the alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead.

Thus, the main options are:

- Option 1: Prescriptive containment and cleanup requirements
  - Pro
    - Clearly identified methodology to minimize/clean up lead hazards.
    - Necessary because many contractors will not know how to perform the work safely.
  - Con
    - To be effective the practices need to eliminate the hazard almost every time, in almost every circumstance. As such, they can be “overkill” in many lower risk situations. Results in unnecessary compliance costs.
    - Prescriptive practices can be outdated quickly as new technology (more effective vacuums, containment, etc.) enter the market. Worse yet, the required practices could prohibit the use of these improved techniques and products.
    - The prescriptive practice may not be the best practice in any number of particular situations a contractor may face, and may result in higher risk or substantially higher expense, or both.
    - May encourage noncompliance, resulting in higher risks
- Option 2: Performance-based containment and cleanup requirements (example, interior and exterior fugitive dust restrictions)
  - Pro
    - Gives the contractor the flexibility to manage the risk as he/she determines to be most effective (cost and safety) given the particulars of the situation.
    - Contractors are told what conditions are expected (not how to do it), they will learn to meet the standard.
    - Reduces overall compliance cost.
  - Con
    - Performance standards may be ignored by contractors (e.g., OSHA Lead In Construction Standard).
    - Does not provide homeowners with clear requirements with which to evaluate performance.
- Option 3: No containment or clean-up requirements
  - Pro
    - Reduces overall compliance cost
    - Guidance and training may adequately address hazards
  - Con
    - Provides no requirements for contractor performance.

- Does not afford any criteria for which a homeowner can evaluate performance.

## 6. *Prohibited Practices*

EPA regulations for lead-based paint abatement restrict or prohibit the use of the following work practices during abatement in target housing and child-occupied facilities:

- open flame burning or torching of lead-based paint is prohibited;
- machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint is prohibited unless used with a HEPA exhaust control;
- dry scraping of lead-based paint is permitted only in conjunction with heat guns or around electrical outlets or when treating defective paint spots totaling no more than 2 square feet in any one room, hallway or stairwell or totaling no more than 20 square feet on exterior surfaces; and
- operating a heat gun on lead-based paint is permitted only at temperatures below 1,100 degrees Fahrenheit

These practices are restricted or prohibited because they often generate excessive levels of lead-contaminated dust. If these same procedures were used on surfaces with lead-based paint during renovation, remodeling or repainting activities, similarly harmful levels of lead dust could be created. Unlike lead-based paint abatement, however, renovation work does not normally focus on paint removal but often involves more limited actions that only disturb surfaces with lead-based paint.

The Agency is aware of concerns over the feasibility and wisdom of prohibiting or severely restricting common renovation practices when cost-effective alternatives may not exist. The Draft Issues Paper titled “Lead Dust Minimization Work Practices for Renovation, Remodeling and Repainting” provides useful insights into the potential implications of prohibiting or restricting the above listed practices during renovation, remodeling and repainting work (Issue #1, page 4).

Thus, the options include:

- Option 1: Adopt lead abatement work practice prohibitions described above
  - Pro
    - Consistent with EPA abatement regulations and the HUD guidelines.
    - Prevents contractors from using methods which present the greatest risk.
  - Con
    - A prohibited practice may be the only practical technique for a particular job.
    - Using appropriate containment and cleanup a contractor using such practices may prevent the introduction of lead hazards.
- Option 2: Modify the abatement work practices prohibitions to:

- a) Allow exterior open flame burning or torching of lead-based paint and
    - b) Eliminate restrictions on the use of dry scraping
  - Pro
    - Painting contractors have noted these techniques are invaluable
    - These practices are often the only feasible and practical technique and if prohibited would impose a substantial burden.
    - Current evidence suggests that there is no substantial reduction in dust generated as a result of using wet methods compared to dry.
  - Con
    - These techniques have been shown to generate high levels of lead dust and require a more intensive cleanup to reduce lead levels
    - Inconsistent with EPA abatement regulations and HUD guidelines which prohibit these methods because of their potential to generate hazards.
- Option 3: Modify abatement work practice prohibitions as in option 2 and also allow interior flame burning with some restrictions – see interior clearance, option 2
  - Pro
    - Gives contractors the ability of utilizing the practice if it is really necessary as long as they assume responsibility for controlling/cleaning the hazard.
    - Often the most economical and practical way to prepare surfaces, especially ornamental woodwork.
  - Con
    - These techniques have been shown to generate high levels of lead dust and require a more intensive cleanup to reduce lead levels
    - Inconsistent with EPA abatement regulations and HUD guidelines which prohibit these methods because of their potential to generate hazards.
- Option 4: Have no restricted practices
  - Pro
    - Allows maximum flexibility for contractors who may still responsibly control the lead hazard.
  - Con
    - These techniques have been shown to generate high levels of lead dust and require a more intensive cleanup to reduce lead levels
    - If dust from these activities cannot be contained/cleaned with standard work practices as specified above, the entire house or adjacent properties could be impacted thereby imposing a significant (health) cost.
    - Inconsistent with EPA abatement regulations and HUD guidelines which prohibit these methods because of their potential to generate hazards.

### 7. Exterior Clearance

EPA could require an exterior clearance following exterior renovation and remodeling. This clearance could include a visual inspection for deteriorated lead-based paint, visual inspection to determine if visible amounts of dust and debris remain, and soil testing for lead contamination.

Exterior renovation, remodeling, and repainting tasks can create lead-contaminated debris (e.g., paint chips) and lead-contaminated dust levels in soil that are equivalent to those produced during lead-based paint abatement. EPA regulations applicable to exterior lead abatement work call for a visual inspection (40 CFR 745.227 (e)(8)(v)(c)) and do not require soil lead testing.

Soil testing conducted after renovation, remodeling, and repainting can only document whether the work contaminated soil if both pre- and post-activity samples are collected. Since many residential buildings already have lead-contaminated soil (particularly along building driplines and foundations), simply collecting a post-renovation sample could inappropriately suggest that the work created lead contamination which, in fact, existed before the project or job began. EPA has heard that soil lead levels measured near driplines and foundations before lead hazard control work begins can often exceed 2,000 parts per million (ppm). The EPA Interim Guidance on Identification of Lead-Based Paint Hazards recommends that access to bare residential soil with lead levels between 2,000 and 5,000 ppm be restricted (e.g., fences, covering with mulch). The HUD *Guidelines* also consider lead levels exceeding 2,000 ppm in bare residential soil to be a lead-based paint hazard and recommend action to restrict access to such soil. (The EPA Interim Guidance recommends restricting access when soil lead levels are considerably lower [i.e., lead levels exceed 400 ppm] if the bare soil is accessible to children. Soil abatement is recommended whenever lead levels exceed 5,000 ppm.)

An additional issue associated with dust testing is that property owners or managers would be obligated, under the Title X Section 1018 lead hazard disclosure requirement, to provide this information to prospective buyers and/or tenants.

Thus, the options include:

- Option 1: Visual clearance following all exterior renovation and remodeling
  - Pro
    - This approach would be consistent with the Federal requirements for lead-based paint abatement projects.
    - Containing and cleaning visible paint chips is much easier (less expensive) than containing and cleaning dust.
  - Con
    - Could encourage practices that generate fine, mobile dust rather than larger more easily managed visible paint chips.
- Option 2: Soil sampling following all exterior renovation and remodeling
  - Pro
    - Such sampling would provide data for disclosure as intended by the Section 1018 rule (i.e., to provide important lead hazard information to potential buyers and/or renters of older properties).
  - Con
    - Similar to those for interior clearance: cost, availability of qualified personnel, and the added time of waiting for laboratory analysis results, which can delay re-occupancy.
    - Existing soil contamination likely outside of house due to previous

- deterioration of leaded paint and deposition resulting from leaded gasoline.
- Due to existing contamination, passing a soil test clearance would be very difficult and would necessitate techniques such as soil removal (very expensive).
- Would significantly increase compliance cost.
- Property owners or managers might object to testing if it created a legal obligation under, Section 1018, to disclose the results.
- Option 3: No clearance following exterior renovation and remodeling
  - Pro
    - Reduced compliance cost
    - Proper containment/cleanup may address the hazard
  - Con
    - No assurance that lead hazards were not introduced as a result of R&R work.

### 8. Interior Clearance

Renovation and remodeling activities can create lead-contaminated dust levels that are equivalent to those produced during lead-based paint abatement where lead dust clearance testing is required by EPA regulations (40 CFR 745.227(e)(8)). The HUD *Guidelines* recommend and the HUD Lead Hazard Control Grant Program requires dust clearance testing after interim controls. The HUD *Guidelines* also encourage dust clearance testing when renovation activities have a strong likelihood of creating substantial lead dust.

EPA's renovation and remodeling regulation could require clearance following interior renovation and remodeling. Interior clearance would likely include a visual inspection of the work area to verify if visible amounts of dust, debris, or residue remain after the renovation and remodeling activity, and clearance sampling for lead-contaminated dust. Such testing can document whether the containment and cleaning procedures were sufficient to reduce dust lead to below acceptable levels (e.g., EPA and HUD recommended dust clearance levels), thereby providing a safe unit for re-occupancy.

Once clearance criteria are met, the contractor who performed the work can conclude that the job is complete. However, if the clearance criteria are not met, the contractor must complete the work and/or repeat the cleaning process until the area is clean enough to meet clearance criteria. For example, if excessive leaded dust levels remain, the contractor's job cannot be considered complete until leaded dust levels are below clearance standards. The clearance examination is similar to the punch list that follows a typical construction or repair job. The major difference is that the normal visual check may be augmented with environmental testing since leaded dust and soil hazards are not visible to the naked eye.

It is important to note that in one recent study it was found that dust levels following cleanup involving the use of HEPA vacuum and wet washing can achieve levels below 100 ug/ft<sup>2</sup> 96% of the time. It was further demonstrated that using this cleaning technique reduced lead dust levels

below 50 ug/ft<sup>2</sup> 94% of the time.

An additional issue associated with dust testing is that property owners or managers would be obligated, under the Title X Section 1018 lead hazard disclosure requirement, to provide this information to prospective buyers and/or tenants.

Thus, the options include:

- Option 1: Dust testing following all interior renovation and remodeling
  - Pro
    - Since most lead hazard control work generates a considerable amount of leaded dust, and since cleaning can be accomplished only with great care and skill, it is necessary to determine if the cleaning was successful.
    - The clearance examination protects all parties involved, including job contractor, the owner, and the resident. The process provides the contractor with an objective determination that the job was completed safely. The owner is assured that the abatement job was successful in correcting hazards and that the amount of leaded dust left after the work was completed is at a safe level.
    - The cost of dust sampling would likely be minor compared to potential liability concerns.
    - Insurance carriers covering lead hazard control work may demand a high degree of assurance that the work was performed properly.
    - Such sampling would provide data for disclosure as intended by the Section 1018 rule (i.e., to provide important lead hazard information to potential buyers and/or renters of older properties).
    - Ensure lead safety
    - Provides consumer with an assurance that work was done lead-safe.
    - Consistent with EPA and HUD regulations pertaining to abatement and hazard control.
  - Con
    - The costs of dust testing may be prohibitive.
    - Timing considerations such as: scheduling the clearance examination when renovation completion dates are often difficult to nail down, and restricting access to the work area until laboratory results are received (Most EPA-recognized laboratories can analyze dust samples in 24 hours).
    - The limited supply of certified inspectors and risk assessors could further drive up the cost of sampling and create other logistical problems (e.g., timeliness in getting an inspector into the field to obtain samples) for many renovation, remodeling and repainting projects. (Note: The Agency is pursuing the creation of an additional discipline “dust testing technician.” This technician will require less training and fewer prerequisites than a risk assessor or inspector. This is expected to reduce cost and increase availability of individuals capable of performing

- clearance examinations).
  - Property owners or managers might object to testing if it created a legal obligation under, Section 1018, to disclose the results.
  - Proper containment/cleanup technique may make clearances unnecessary.
  - It may be difficult to initially pass the clearance test.
- Option 2: Dust testing following specific jobs involving large-scale surface preparation or demolition and any practice prohibited by the abatement rules -- see prohibited practices
  - Pro
    - See option 1 Pro
    - Reduced overall compliance cost
    - Requirement to apply in only the more risky jobs. Lowers compliance burden and speeds re-occupancy for low-risk events.
  - Con
    - In some situations a small job might generate a significant hazard (due to concentration of lead in paint, location in home, characteristics of occupants, etc.) while in other situations a “large scale” job may pose only minimal risk.
    - Inconsistent with EPA and HUD regulations.
    - Proper containment/cleanup technique may make clearances unnecessary.
- Option 3: Visual clearance following all interior renovation and remodeling
  - Pro
    - Reduced compliance cost
    - Proper containment/cleanup technique may make clearance unnecessary.
  - Con
    - This option would reduce the costs of testing. However, it may be difficult to verify that a contractor properly completed the cleaning protocol.
    - A visual examination alone may not be adequate for determining if a residence is safe for occupancy, since small dust particles are not visible to the naked eye. A person with normal eyesight cannot detect individual dust particles smaller than 50 mm in diameter (Olishifski, 1983). Data indicate that a significant percentage of the dust generated during abatement is smaller than 50 mm (Mamane, 1994; NIOSH, 1993b). Since these smaller dust particles are associated with an increased risk of lead poisoning, clearance dust testing is required to determine if a leaded dust hazard remains following lead hazard control work.
    - Cheaper (but not too much so), and quicker re-occupancy.
- Option 4: No clearance following interior renovation and remodeling
  - Pro
    - Reduced compliance cost
    - Proper containment/cleanup technique may make clearances unnecessary.
  - Con
    - No assurance that lead hazards were not introduced as a result of R&R work.

- Since most lead hazard control work generates a considerable amount of leaded dust, and since cleaning can be accomplished only with great care and skill, it is necessary to determine if the cleaning was successful.
- The cost of dust sampling would likely be minor compared to potential liability concerns.
- Inconsistent with EPA and HUD regulations pertaining to abatement and hazard control.

Note: Consumer dust testing kits are available. The Agency would advocate their use at any time other than instances that a certified individual is required to conduct clearance. These kits retail for less than \$20 and typically include laboratory analysis of two dust samples as well as the materials needed to collect the samples (e.g., gloves, tape measure, wipes, container, etc.). The kit also provides materials to mail the samples to the laboratory for analysis. Results can be received via mail or fax. The potential advantages of allowing a homeowner or contractor to collect samples are cost savings and ease of implementation since no additional person need be hired. In addition, consumer dust testing could indirectly create a new expectation for contractor performance. If contractors know that consumers will take final dust tests, they will be more likely to control dust and/or take dust samples themselves. In other words, once consumers demand that a job not leave lead hazards in their homes and properties, then and only then will contractors take the appropriate precautions. The disadvantages include the potential conflict of interest a contractor may have (i.e., by tampering with a sample to ensure it passes dust clearance levels) and the potential for sampling error due to limited experience and/or lack of training in obtaining such samples.

## Attachment 4: SBREFA Outreach Questions & Answers

### Economics

**Q1:** *Can more details regarding the assumptions or baseline numbers used in calculating the costs associated with work practices, such as containment and cleanup, be provided.*

A1: These cost estimates were incremental costs based on the assumed work practices described in the *Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual*. The other primary data source for work practice cost information was the Specmaster database (The Enterprise Foundation, 1995).

In order to determine how often the proposed work practices are currently used (in the absence of the proposed regulation), we contacted industry experts to answer a questionnaire on work practices and emphasized that we were looking for answers that reflect current industry practices and not what are believed to be "best" practices. The questionnaire was used to determine if the listed work practices are currently in use and if they are, the frequency with which they occur. We do not include the cost of any required work practice currently used in proportion to the frequency we estimated from our survey. For example, if our respondents indicated that wet cleaning was used after only 15% of jobs (where it would be required in the proposed rule), we included the cost of that activity for 85% of the required jobs in our compliance cost estimate. In short, we did not find any work practices that *all* R&R firms currently do *all* of the time, though some practices such as sweeping and vacuuming with a shop vacuum occur with more regularity. A table of data sources and assumptions underlying the cost analysis is forthcoming.

**Q2:** *What are the sampling costs for a risk assessor compared to a clearance technician.*

A2: The largest component of clearance sampling cost is labor (including travel time). The clearance technician will cost roughly \$15/hr (estimated loaded rate). Depending on the amount of experience a risk assessor will cost approximately \$35-\$60/hr (estimated loaded rate). As such, sampling using risk assessors can be over twice as expensive as with a clearance technician.

**Q3:** *Do work practices include the cost estimates for prohibited work practices.*

A3: The analysis includes required estimates of departures from current existing work practices where information was available (including our survey of current practices). There is limited information on the existing use (frequency) and substitutability of some of the prohibited practices (eg. flame burning) which hindered our ability to estimate the burden of those prohibitions. However we were able to include some elements such as the

capital costs for HEPA shrouded equipment and HEPA vacuums.

**Q4: Do cost estimates include employee training and turnover.**

A4: Yes, EPA assumed that firms pay employee training expenses, and incorporated employee turnover rates appropriate for various disciplines within the industry. Note that training costs were annualized over a three year period using a 3% discount rate.

**Q5: How will the economic analysis of the proposed rule account for the underground economy that will arise when the rule is enforced.**

A5: The Agency understands that complying firms compete with this underground segment of the industry. The economic analysis, therefore, incorporates the conservative assumption that impacted entities will not be able to pass the proposed rule's compliance costs on to customers. To the extent that complying entities can differentiate their product (service) and pass costs on, the impact is overstated.

**Q6: Will the costs of insurance and liability be factored into the cost estimates.**

A6: At present, we are looking into this issue and gathering lead liability insurance information. The proposed rule does not include any insurance or liability provisions. It may be prudent, however, for certified firms to carry this type of coverage. Would the insurance be in response to pre-rule liability or liability *caused* by the proposed rule? In other words, should R&R firms already be carrying this coverage? We welcome continued comment on this issue.

**Q7: Do cost estimates include recordkeeping and administrative burden?**

A7: The existing analysis does not currently include estimates of recordkeeping burden. The extent of recordkeeping activities required by the rule is unclear at this time. The Agency's intention, however, is to minimize recordkeeping and administrative burdens.

**Q8: In jurisdictions with rent control, such as Washington, D.C., the costs of the rule for rental owners will increase significantly because they will be unable to pass on their costs to renters.**

A8: Due to a lack of available data our analysis adopts the conservative assumption that *none* of the impacted entities (including rent controlled rental owners) will be able to pass on any compliance costs.

**Q9: Are equipment or capital costs included in the cost estimates.**

A9: Yes, the work practices include all capital costs.

**Q10: How much time is necessary to complete clearance testing.**

A10: If clearance is required, it must be conducted at least one hour after completion of work. Most EPA recognized laboratories can analyze dust samples in 24 hours.

**Q11: What is the cost of each wipe?**

A11: Laboratory analysis costs range from \$5 to \$12 per sample, or higher.

**Q12: What is the total cost for clearance?**

A12: We collected cost estimates from 9 lead inspection firms based on a 3 sample (each a 12"x12" wipe) clearance test and lab analysis. The preliminary total cost estimates - including travel time, labor (dust wipe tech @ \$15/hr), lab charges, delivery, and report - ranged from \$100 to \$200 for interior and from \$50 to \$200 for an exterior visual test. Based on these conversations we used the following as preliminary estimates in our analysis:

interior tests

cost with dust wipe and visual clearance	\$150
cost w/o dust wipe (visual clearance only)	\$100

exterior tests

cost with soil sample and visual clearance	\$150
cost w/o soil sample (visual clearance only)	\$100

**Q13: Can costs be estimated on a per occurrence/per day basis.**

A13: Due to the wide variety of renovation work and corresponding variety of firms, it is difficult to define a typical occurrence, firm or day. As an alternative, a "Unit Compliance Cost" sheet was provided to the potential SERs so that we could discuss the costs using a common denominator. The resulting feedback was incorporated into revised cost estimates, including revised unit cost information, that will be included in the SER information material. Potential SERs can use the unit cost information along with their own experience to estimate compliance costs (per day or per job) for a firm like their own. Also, the table titled "Changes in Regulatory Compliance Estimated Cost by Varying Scenario 2" was modified to provide more informative incremental estimates.

**Q14: Are multi-family (rental) unit cost issues considered as well. (ie. frequent unit turnover)**

A14: Yes, the number and type of renovations in multi-family rental units was estimated as part of the cost analysis. The rental unit renovation activities included turnover related events (primarily painting). Note that the *direct* impacts of this rule will be addressed in the SBREFA analysis and other impacts are evaluated in the overall economic analysis for the rule. Direct impacts include costs related to "in-house" maintenance crews.

**Q15:** *Can an evaluation of the price elasticity of demand associated with the rulemaking be included in the economic analysis.*

A15: Elasticity of demand in this regulatory setting is related to consumers' proclivity to substitute from a firm performing R&R activities in a lead-safe manner to a non-complying firm or to a do-it-yourself job as the relative prices change. Elasticity information could provide insight into R&R firms' ability to pass on costs to customers and to the concerns that the proposed regulation may actually increase the quantity of higher risk "non-professional" R&R work. EPA is preparing a short memo that will discuss issues related to price elasticity of demand (see also the response to the "underground economy" question above). The memo will focus on market structure issues rather than provide any estimates of elasticity of demand. Unfortunately, developing empirical elasticity estimates is problematic. EPA did search the existing literature for any related estimates (willingness to pay for lead safety for example) but were unable to uncover relevant data.

### **Health Effects**

**Q1:** *Explain the correlation between lead poisoned children and R&R activities.*

A1: The association between R&R activities, other explanatory variables and children's blood-lead measurements was evaluated in the Phase III study using logistic regression. Logistic regression is a statistical method used to explain the relationship between a dichotomous response variable (elevated versus non-elevated blood-lead) and a suite of explanatory variables. The explanatory variables provide information on social and demographic factors affecting children (e.g. household income), as well as on R&R activities conducted in the children's residences.

The odds ratio is the natural form of expression of inference (conclusion) based on logistic regression. An odds ratio is a fraction, that expresses the probability that a subject has some condition over the probability that a subject does not have the condition. An odds ratio statistically greater than 1 indicates that the numerator group is at higher risk than the denominator group. In the present case, the odds are the probability of a child having an elevated blood-lead concentration relative to the probability of a child not having an elevated blood-lead concentration. The odds ratio for "any R&R work" was 1.309. This means that children living in residences where any R&R work had been done during the previous year had about a 31% greater likelihood of having an elevated blood-lead concentration than children living in residences where no R&R work had been conducted.

**Q2:** *Were controls used in the study, specifically any activities other than R&R.*

A2: The Wisconsin Childhood Blood-Lead Study was a retrospective **case-control** study. All children with blood-lead measurements of 7 ug/dl or above were selected for inclusion in the study. This was done because there were relatively few children with blood-lead

concentrations of 7 ug/dl or above. A sample of children with blood-lead measurements below 7 ug/dl were randomly selected. For comparison purposes, children with blood-lead measurements of 10 ug/dl or higher were compared with children with blood-lead measurements below 10 ug/dl (control group). A variety of other explanatory variables (age of housing, household income, adult education, etc.) were dealt with in much the same manner.

**Q3: *Regarding the study, how many blood level increases were in environments that were commercially renovated, such as schools or pre-schools, and rental housing and owner-occupied housing.***

A3: All questions on R&R asked during the telephone interview concerned R&R work that was conducted in each family's residence. The reliability of information about R&R that had been conducted in other environments that the child may have been exposed to would have been a valuable contribution to the data, but was judged to be too unreliable to try to estimate in this survey. Specifically, the extent of the knowledge that parents or guardians might have about R&R in other environments was judged to be too uncertain to use.

**Q4: *Can data regarding the extent of the problem be provided, in order best to determine the target housing stock for the proposed rule.***

A4: Several survey questions in the Phase III study focused on information about the age of the child's residence, its condition and some other residential characteristics. This information was systematically evaluated in the Phase III analysis. The analysis indicated that home age, the existence of peeling paint, and type of residence (single, apt., mobile, duplex) were all important explanatory variables for predicting elevated blood-lead concentrations in children. For example, independent of any R&R work, the older the residence, the greater the likelihood of a child having an elevated blood-lead concentration. Analysis of the interaction effects of these residential characteristics with R&R work activities did not demonstrate that any interaction effects achieved statistical significance. In other words, R&R work done in older houses (compared to newer houses) can not be demonstrated to increase the risk of lead poisoning beyond what was found for older houses in general. Failure to demonstrate significant interaction effects does not mean they do not exist, just that they could not be distinguished in this data set.

**Q5: *Was a comparison made between blood lead levels found in children and the adult population.***

A5: No comparison of blood-lead concentrations of children and parents was made. Only the blood-lead measurements of the children were provided to the researchers, so no comparison between children and their parents or guardians was possible. Several of the survey questions inquired about potential occupational exposure to lead for the parents/guardians. It was found that children whose parents/guardians were employed in occupations known to cause lead exposure did show an increased likelihood of having

elevated blood-lead concentrations. The odds ratio for this group was 1.318. That means that children whose parents/guardians work in occupations with know lead exposure were about 32% more likely to have elevated blood-lead levels compared to children whose parents/guardian did not work in these occupations.

**Q6:** *Does the study identify whether housing was owner-occupied or rental. In Maryland, Pennsylvania, Virginia, and California, studies have been done that indicate that the frequency of child lead poisoning is greater in owner-occupied housing.*

A6: The first survey question was, “Do you own or rent your home?” The percentage of children with blood-lead measurements above 10 ug/dl was higher in residences that were rented than in owner occupied residences. It should be emphasized that a variety of factors (demographics, housing characteristics, and other sources of lead exposure) tend to co-vary in the population. It is very difficult,(or impossible) to conclude that any single factor is responsible for a child’s lead poisoning.

**Q7:** *Did the incidences of increased blood levels occur in situations where the homeowner was doing the work or where a professional had been contracted to do the work.*

A7: The Phase III study showed that when the homeowner conducted the work, there was a substantial reduction in the risk of exposure to children in the home. This is an unexpected result, and may be indicative of the extent of the R&R work that was conducted by homeowners in comparison to professional R&R workers .

**Q8:** *Will the Wisconsin data used in the study serve as the basis for the applicability determinations.*

A8: It will contribute to the entire body of evidence.

**Q9:** *Where can information regarding incidents of children with EBLs be found.*

A9: The Departments of Health in each state should have this information. The Center for Disease Control in 1998 reported that there are 890,000 children with EBLs.

### **Work Practices**

**Q1:** *What would be required to support a determination of lead-based paint free?*

A1: A lead-based paint free exemption will likely be accomplished in one of two ways. First, either a certified inspector or risk assessor will conduct an inspection of the affected surfaces (partial inspection). Current regulation defines inspection as a surface-by-surface investigation to determine the presence of lead-based paint and does not provide for an inspection of only a portion of a residence. Therefore, the renovation and remodeling rulemaking will likely define and provide standards for the conduct of a partial inspection. Second, documentation showing evidence of previous renovation

replacing pre-1978 surfaces, or post-1978 additions will likely be acceptable.

**Q2: *Is the 2 ft<sup>2</sup> deminimus per room or component?***

A2: The 2 ft<sup>2</sup> deminimus will most likely be per component. Component is defined at 40 CFR 745.223 as specific design or structural elements or fixtures of a building, residential dwelling, or child-occupied facility that are distinguished from each other by form, function, and location. These include, but are not limited to, interior components such as: ceilings, crown molding, walls, chair rails, doors, door trim, floors, fireplaces, radiators and other heating units, shelves, shelf supports, stair treads, stair risers, stair stringers, newel posts, railing caps, balustrades, windows and trim (including sashes, window heads, jambs, sills or stools and troughs), built in cabinets, columns, beams, bathroom vanities, counter tops, and air conditioners; and exterior components such as: painted roofing, chimneys, flashing, gutters and downspouts, ceilings, soffits, fascias, rake boards, cornerboards, bulkheads, doors and door trim, fences, floors, joists, lattice work, railings and railing caps, siding, handrails, stair risers and treads, stair stringers, columns, balustrades, window sills or stools and troughs, casings, sashes and wells, and air conditioners.

**Q3: *Would tenants be required to vacate the building while R&R activities are being performed.***

A3: Tenants access to the work area will likely be restricted. Therefore, occupant access to a dwelling, or portion thereof, would be dependent on the scope of the project and the size of the work area encompassed by such work.

**Q4: *Describe work practices for an apartment hallway that needs light sanding and painting.***

A4: Specific work practices would be dependent on a number of factors which have yet to be decided. Not the least of which is the determination as to whether the regulation will be prescriptive or performance based in nature. A performance based standard would allow this job to be done in any number of ways as long as performance standards were met. For example, the contractor would likely be responsible to prevent the migration of dust from the work area and could be required to meet a clearance criteria. On the other hand a prescriptive standard would more clearly spell out the required steps. These steps are described in the Draft Technical Manual in three levels dependent on the quantity of dust generated by the specific task performed. For example, minimal dust generating tasks such as sanding areas less the 2 ft<sup>2</sup> trigger level 1 controls (tasks disturbing 2 ft<sup>2</sup> or less will likely be exempted from regulation), moderate dust generating tasks such as wet sanding more than 2 ft<sup>2</sup> trigger level 2 controls, and dry sanding triggers level 3 controls.

**Q5: *Can the regulation place some burden on homeowners to ensure lead-safety in their homes.***

A5: Title IV of TSCA does not specifically address whether the regulatory requirements developed under section 402 may apply to individual homeowners. The Agency has decided that its section 402 rules should apply to all individuals and firms conducting lead-based paint activities in target housing and child occupied facilities, except persons who perform lead-based paint activities at residences which they own, unless the residence is occupied by a person or persons other than the owner or the owner's immediate family while these activities are being conducted. If the property is occupied by an individual that is not the owner or the owner's immediate family, any lead-based paint activity, conducted at that time, must be conducted by a certified individual.

The very title of section 1021 of the Residential Lead-Based Paint Hazard Reduction Act of 1992, indicates that the scope and focus of this section is on training and certification requirements for contractors, not homeowners. Section 1021 of the 1992 Act added a new Title IV to TSCA. Title IV includes both section 402 ("Lead-Based Paint Activities Training and Certification") and 404 ("Authorized State Programs"). Significantly, section 1021 itself is entitled "Contractor Training and Certification." The Agency believes that the Congressional focus on regulating contractor activity evidenced by the reference in section 1021's title to "contractors" as well as certain other language in sections 402(c)(3) and 406(b) requiring persons who perform renovation of target housing for compensation (e.g. "contractors") to provide safety pamphlets to owners and occupants creates enough ambiguity with respect to Congressional intent that such an inference need not be drawn.

EPA plans an aggressive awareness campaign directed at homeowners. This program will include not only the design and distribution of informational materials, but the Agency also intends to develop seminars to alert homeowners to the potential hazards associated with renovation and remodeling activities.

**Q6: *Has EPA studied the CFC Program that covers owner-occupied and rental housing. This program could be used as a model for the proposed R&R rule.***

A6: Overview of CFC Program  
40 CFR Part 82 Protection of Stratospheric Ozone; Refrigerant Recycling has five main elements. First, the Agency requires technicians servicing and disposing of air-conditioning and refrigeration equipment to observe certain service practices that reduce refrigerant emissions. Second, EPA requires technicians servicing air-conditioning and refrigeration equipment to obtain certification through an EPA-approved testing organization and restricts sales of refrigerant to these certified technicians. Third, EPA establishes equipment and reclaimer certification programs. These would have the goals of verifying: (1) That all recycling or recovery equipment sold was capable of minimizing emissions and (2) that reclaimed refrigerant on the market was of known and acceptable

quality to avoid equipment failures from contaminated refrigerant. Fourth, EPA requires repair of substantial leaks, based on annual leak rates which vary according to two categories of refrigeration equipment. Fifth, to implement the safe disposal requirements of section 608, EPA requires that ozone-depleting refrigerants in appliances, machines, and other goods be removed from those items prior to their disposal, and that all air-conditioning and refrigeration equipment except for small appliances and room air conditioners be provided with a servicing aperture that would facilitate recovery of the refrigerant. Small appliances will require a process stub for easy access.

#### Applicability of elements of the CFC program

Three elements of the CFC program are most relevant to the lead renovation and remodeling standards. They include; work practice, employee certification, and equipment certification programs.

- *Work practice:*

The CFC program requires certain work practices to be followed in order to reduce refrigerant emissions.

The R&R rule will also require work practices to be followed, whether they be prescriptive or performance based, in order to minimize lead hazards.

- *Employee certification:*

The CFC program incorporates four levels of certification which include Type I, II, III, and universal certification. Certification for Type II, Type III and universal technicians is dependent upon passage of a closed-book, proctored test, administered in a secure environment, by an EPA-approved certifying program. Certification for Type I technicians is dependent upon passage of an EPA-approved test, provided by an EPA-approved certifying program. Organizations providing Type I certification only, may chose either an on-site format, or a mail-in format.

In the context of lead training, the Agency recognizes that teacher/student interaction and hands-on training helps trainees to retain the knowledge they acquire. Hands-on training, the Agency believes is especially important to enable workers to conduct safe, reliable and effective renovations. The Agency will consider the use of alternative training techniques (e.g., video training, computer-based training) as a supplement to the hands-on skills assessment or as a substitute for the lecture portion of the training course requirements. However, the regulation will likely require all training programs, including those using alternative training methods, to meet the minimum hourly requirements for hands-on activities in their training courses. In addition, training programs will likely be required to administer a course test and conduct a hands-on skills assessment.

- *Equipment certification programs:*

The CFC program established a certification program for recovery and recycling

equipment. Under the program, EPA requires that equipment be tested by an EPA-approved testing organization to ensure that it meets EPA requirements.

Title IV of TSCA includes similar provisions for such a certification program. The statute suggests the establishment of test protocols and performance characteristics to ensure that lead-based paint hazard evaluation and education products introduced are effective for their intended use. This aspect of Title IV has not yet been addressed.

**Q7: *Will pre-and post-testing be considered in order to achieve clearance. Pre- and post sampling should be included as a requirement to ensure that lead levels are at least maintained, if not decreased.***

A7: The Agency would like to further discuss the significance and practicality of this type of clearance protocol and will likely consider it during development of the proposed regulation.

**Q8: *What procedure would a contractor follow if there is a high level of lead in a home before beginning a job.***

A8: A renovation contractor is not typically in the business of identifying lead hazard or remediating such hazard. Therefore, the renovation contractor would conduct the work which he was tasked to perform, following the applicable work practice standards, and perform a clearance examination of the work area as required following work.

**Q9: *Will interior clearance require 12-15 pre- and post samples.***

A9: Clearance will likely require the following sampling in the work area:

- Two dust samples per room (up to four rooms) including one interior window sill or trough, and one floor, and/or
- One floor sample for every 2,000 ft<sup>2</sup> of common area

**Q10: *Must dust swipes must be analyzed by an EPA certified lab or any certified lab.***

A10: Any dust samples collected pursuant to this regulation would be required to be analyzed by a laboratory recognized under the NLLAP program.

**Q11: *How were the three task levels described in the Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual developed.***

A11: The EPA developed the *Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual* over the past year. Because of the variation of R&R job types the Agency developed a three tier system intended to be simple, while addressing the hazards associated with the size of the job. The manual defines the three tiers as minimal, moderate, and substantial lead dust-generating tasks. Common tasks are

grouped by their likely potential to create lead-contaminated dust and technical specifications describe recommended precautions to ensure that lead hazards are minimized.

**Q12: *Will a distinction be made between the small homeowner and the larger multi-family owner.***

A12: Currently, the Agency does not plan to differentiate between small homeowners and larger multi-family owners as part of this regulation. However, EPA is willing to discuss possible relevant distinctions and their applicability to this rulemaking.

**Q13: *What is the distinction between certification and accreditation.***

A13: Certification applies to both individuals and firms, whereas accreditation applies to a training program. The terms will likely be defined as follows:

- A certified firm is a company, partnership, corporation, sole proprietorship, association, or other business entity that performs lead-based paint R&R activities to which EPA has issued a certificate of approval.
- A certified individual is an individual who has been trained by an accredited training program and certified by EPA to perform lead-based paint R&R activities.
- An accredited training program is a training program that has been accredited by EPA to provide training for individuals engaged in lead-based paint R&R activities.

**Q14: *Can EPA change the year of applicability if local ordinances banned lead-based paint prior to 1978.***

A14: The Agency would like to further discuss this type of exemption and will likely consider it during development of the proposed regulation.

**Q15: *Is there data from the paint industry regarding how much residential lead-based paint was sold in the 1960's and 1970's.***

A15: HUD provides extensive and useful information about the concentration and square footage of paint in pre-and post-1960 homes in a report titled "Comprehensive and Workable Plan for the Abatement of Lead-Based Paint in Privately Owned Housing". A summary of this document titled "Comparison of Pre- and Post-1960 Housing Stock" was forwarded to potential small entity representatives.

## **Attachment 5: Overview of Potential Risk**

### **Purpose/Objective**

The purpose of this document is to explain the basis for EPA's conclusion that residential renovation and remodeling (R&R) activities produce lead exposure problems for children. The link between the production of lead dust by R&R work activities, the exposure of young children to that lead dust, and the adverse health effects resulting from this lead exposure are briefly described.

### **Health Effects**

Lead poisoning in children is widely recognized as a major health problem in the United States. While there are many sources of lead that children may be exposed to, lead-based paint in residential housing is considered the major source. Lead is a powerful toxicant with no known beneficial purpose in the human body. The health risks associated with lead exposure are significant for all humans, but young children, with their developing nervous systems, are especially vulnerable to lead's injurious effects. Lead's toxic effects are most evident in the nervous system, although all parts of the body can be damaged at high exposure levels. This is especially troubling for the young because many of the effects that lead has on the central nervous system are irreversible.

Blood-lead concentration is the most commonly used measure of lead exposure. An extensive body of research relates the health effects of lead exposure to blood-lead concentration. This research includes a wide range of epidemiological studies involving human subjects. Corroborating the human studies are a number of controlled laboratory experiments on the effects of lead exposure to a variety of animals. These animal experiments clearly demonstrate that the health effects observed in the human studies are indeed caused by lead exposure.

The research has documented that reductions in intelligence, impaired hearing, and interference with vitamin D metabolism can occur at blood-lead concentrations in the range of 10 - 15 ug/dl (with no apparent minimal threshold for lead's deleterious effects). Long-lasting impacts on intelligence, motor control, hearing, etc. have been documented at blood-lead levels that don't produce obvious symptoms and were once thought to be safe. At blood-lead levels of 20 to 40 ug/dl, the effects of lead become more pronounced, and other adverse health effects are observed in a broader range of body systems, including increased blood pressure, delayed reaction times, anemia, and kidney disease. At blood-lead concentrations above 60 ug/dl, symptoms of severe lead poisoning include kidney failure, abdominal pain, nausea and vomiting, and pronounced mental retardation. At higher blood-lead levels, convulsions, coma, and death may result.

### **Risk/Exposure**

While it is possible for lead to enter the body through ingestion (eating and drinking), inhalation (breathing in air), or absorption (through skin contact), many researchers consider ingestion of

dust and soil via hand-to-mouth behavior the major route of exposure for children. Children that are 1-2 years old who are crawling or just beginning to walk are in frequent contact with the floor. These kids put their hands and other items, like toys, in their mouth often. Lead dust is swallowed when these children place their hands, moistened by saliva, repeatedly on floors and other surfaces that may contain lead dust, and then return their hands to the mouth. Studies have indicated, in fact, the blood-lead levels have a tendency to increase rapidly and peak in children 1-2 years old.

The empirical evidence indicates that lead-contaminated dust, even at low to moderate levels, can significantly increase children's blood-lead concentrations. What's more, lead on small particles of dust, when ingested, is more apt to end up in the blood stream. In addition, these smaller particles are difficult to see with the naked eye and are hard to detect when scattered evenly across a floor or other surface.

A broad range of studies have indicated that lead-based paint, including lead-contaminated soil and lead-contaminated dust, is the primary contributor to lead exposure in young children. The scientific literature contains extensive evidence of the relationship between childhood blood-lead concentrations and environmental-lead levels. This evidence is provided by two types of studies. The first type investigates the relationship between elevated blood-lead concentrations and lead levels in the child's residential environment. This first type of study has consistently demonstrated that elevated blood-lead concentrations are associated with elevated lead levels in the dust, paint, and soil in the surrounding environment. Intervention studies are the second type. These studies have demonstrated that reduction in children's blood-lead concentrations has occurred following interventions that reduce childhood lead exposure from paint, dust and soil.

Levels between 15 and 50 ug/ft<sup>2</sup> on floors can lead to potentially harmful levels of lead in the blood. When coupled with exposure from other locations like window sill dust, exterior dust, or exterior soils, some studies have indicated that problematic levels of floor dust lead can be below 10 ug/ft<sup>2</sup>.

### **Effects of R&R**

EPA launched a series of studies in 1993 collectively known as the R&R Study. Potential for lead exposure to child occupants from R&R was explored in two separate ways. The first way was by measuring lead levels in settled dust produced by a variety of R&R work activities. The second approach used a retrospective survey relating children's blood-lead levels to R&R work that had been conducted in their residences. The R&R Phase I study demonstrates that large amounts of lead-dust can be generated by most R&R work activities (window replacement, interior demolition, HVAC work, sanding of painted surfaces, sawing of painted surfaces, etc.). These work activities produced lead loadings (in settled dust) that ranged from approximately 300 ug/ft<sup>2</sup> to over 40,000 ug/ft<sup>2</sup>.

The effectiveness of cleanup for removing settled lead-dust was examined using two popular cleanup methods: broom sweeping and shop-vacuuming. Data from R&R Phase I show that standard broom sweeping or shop-vacuuming cleanup can remove a high percentage of the lead-

dust (99%), but lead levels still remain consistently above 100 ug/dl. In addition, the data show that standard cleanup techniques sometime disperse lead-dust throughout the work-site, thereby increasing lead levels in areas more distant from the work site.

The relationship between residential R&R work and elevated blood-lead levels among children living in those residences was explored in Phase III of the R&R study. Analysis of questionnaire and blood information indicates that general residential R&R is associated with an increased risk of elevated blood-lead levels in children. Specifically, a child living in a residence where R&R was conducted in the last 12 months was 30% more likely to have an elevated blood-lead level. Phase III also showed that some R&R activities (paint removal by heat gun open flame, chemical stripper, and surface preparation, etc.) were specifically associated with an increased risk of elevated blood-lead in children.

The results of EPA's R&R study support the conclusions of many state and public health department officials that residential R&R activities possess a significant lead exposure problem to children.

### Summary

It has been established that lead is a potent poison that is harmful even in very small amounts. It has also been demonstrated by both human and animal studies that lead can lead to effects on the nervous system at blood lead levels at 10 ug/dl or lower. In addition, it has been established that elevated blood-lead levels can result when floor dust levels range from 15 - 50 ug/ft<sup>2</sup>. Phase I of the R&R study and work by other researchers have measured floor dust levels generated from various R&R activities to range from 300 ug/ft<sup>2</sup> to 40,000 ug/ft<sup>2</sup>. These measures are 2-3 orders of magnitude greater than levels that have been established to cause elevated blood-lead levels. Further, these values exceed the Agency's proposed floor dust standard of 50 ug/ft<sup>2</sup> as being a hazard. The compelling conclusion is that R&R activities can result in dangerous potential exposures to children, especially those aged 1-2 years old.

### References

Gilbert, S.G. and Rice, D.C. (1987) "Low-level Lifetime Lead Exposure Produces Behavioral Toxicity (Spatial Discrimination Reversal) in Adult Monkeys." *Toxicology and Applied Pharmacology*. 91:484-490.

Goldstein, G. (1992) "Developmental Neurobiology of Lead Toxicity." In *Human Lead Exposure* (Needleman, H. Ed.) 125-135.

Lanphear, BP, Matte, TD, Rogers, J, Clickner RP, Dietz, B, Bornsheim, RL, Succop, P, Mahaffrey, KR, Dixon, S, Galke, W, Rabinowitz, M, Farfel, M, Rohde, C, Schwartz, J, Ashley, P, and Jacobs, D. (1998) "The Contribution of Lead-Contaminated House Dust and Residential Soil to Children's Blood Lead Levels: A Pooled Analysis of 12 Epidemiologic Studies." *Environmental Research* (Section A). 79:51-68.

- U.S. Environmental Protection Agency (1998a) "Risk Analysis to Support Standards for Lead in Paint, Dust and Soil." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency. EPA 747-R-97-006
- U.S. Environmental Protection Agency (1998b) "An SAB Report: Technical Review of the Proposed TSCA Section 403 Regulation (Identification of Dangerous Levels of Lead)." Environmental Health Committee, Science Advisory Board, U.S. Environmental Protection Agency. EPA-SAB-EHC-99-004, November 1998.
- U.S. Environmental Protection Agency (1997a) "Lead-Based Paint Abatement and Repair and Maintenance Study in Baltimore." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency. EPA 747-R-95-012. May 1997.
- U.S. Environmental Protection Agency (1997b) "Lead Exposure Associated with Renovation and Remodeling Activities: Environmental Field Sampling Study. Volume I: Draft Technical Report." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency. EPA 747-R-97-007.
- USEPA (1998) "Review of Studies Addressing Lead Abatement Effectiveness: Updated Edition." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency. EPA 747-B-98-001.

## Attachment 6: Overall Estimated Costs of Various R&R Rule Options

### Revised Estimates:

The current draft compliance cost estimates presented below have increased relative to earlier drafts. The majority of the increase can be attributed to the following three changes: 1) American Housing Survey data regarding the number of multi-family rental unit renovations was interpreted incorrectly in earlier drafts resulting in a significant increase in the number of annual events (from 16 to 22.3 million). Note that while total compliance cost substantially increase, the “per event” cost is minimally affected by *this* change. Also, presumably additional benefits would accrue for each rental unit added so as to offset the higher costs. 2) Based on feedback received from potential SERs, training costs were increased based on additional research by the Agency. 3) Potential SERs also indicated that clearance testing costs were too low. Subsequent Agency investigation confirmed this feedback, so those estimates were increased.

The following tables present EPA estimates of the costs of possible scenarios for the renovation and remodeling rule. Table 1 contains two different scenarios, Scenario 1, known as the Abatement or Full Regulatory Scenario, and Scenario 2, referred to as the Limited Regulatory Scenario.

Table 1 lists, for each scenario, the estimated average regulatory compliance cost, the estimated average regulatory compliance cost per R&R event, and the primary requirements under each scenario. For this comparison an R&R “event” is a combination of tasks that occur in the same room at the same general time. The average cost of an R&R event is approximately \$2,500.

EPA has estimated that a rule that applies to all pre-1978 housing would affect 14.5 million interior and 7.9 million exterior R&R events for a total of 22.3 million events per year. These estimates are based on U.S. Census and 1997 American Housing Survey data, with do-it-yourself, non-lead-based paint, and other events excluded as appropriate. EPA also estimates that there are approximately 1.5 million R&R workers, supervisors, and technicians involved in R&R work, 230,000 R&R firms, and 500 potential training providers. Employee and firm turnover rates, by discipline, included in the analysis.

**Table 1**  
**Estimated Costs of Abatement (or Full Regulatory) Approach and Limited Regulatory Approach**

	<b>Scenario 1: Abatement or Full Regulatory Scenario</b>	<b>Scenario 2: Limited Regulatory Scenario</b>
<b>Total Regulatory Compliance Cost</b>	\$5,130,000,000/yr.	\$3,115,000,000/yr.
<b>Regulatory Compliance Cost per Event (22.3 million events)</b>	\$230. <sup>00</sup>	\$139. <sup>00</sup>
<b>Category</b>	<b>Scenario 1 Requirements</b>	<b>Scenario 2 Requirements</b>
Applicability	All pre-1978 housing	All pre-1978 housing
Firm Certification	Yes	Yes
Individual Training/Certification	Training and certification for all workers	Training for all workers; no certification
Accreditation	Yes	Yes
Work Practices	Prescriptive	Performance
Prohibited Practices	Abatement	Abatement restrictions, dry scrape & flame OK w/clearance
Exterior Clearance	Visual	Visual

Table 2 shows how the estimated regulatory compliance cost of Scenario 2, the Limited Regulatory Approach, would change with changes in specific requirements. The first row for each component presents the option for Scenario 2. For example, for the Individual Training and Certification component, Scenario 2 requires training for all workers but no certification. If this scenario were modified to require both training and certification for all workers, the estimated total regulatory compliance cost would increase by \$39,000,000 a year. The far right column expresses the same modification as an increase of \$26 per average employee (annualized). As another example, Scenario 2 requires that all firms be certified. If certification were required only for firms involved in large-scale jobs, the estimated regulatory compliance cost reduction would be minimal. If, however, certification was not required for any firm, then the estimated total regulatory compliance cost would decline by approximately \$21,000,000 a year or \$92 per firm (annualized). Note that estimated cost decreases indicated by parentheses around the number (e.g., (\$21,000,000/yr.)).

**Table 2**  
**Changes in Regulatory Compliance Estimated Cost by Varying Scenario 2**

Component	Requirements	Total Regulatory Compliance Cost	Regulatory Compliance Cost Per-Unit (event, firm, employee, etc.)
Applicability	All pre-1978 housing All pre-1960 housing (all R&R firms and workers incl.) All pre-1960 housing (61% of R&R firms and workers incl.)	* Scenario 2 * (\$1,140,000,000) (\$1,221,000,000)	* Scenario 2 * (\$131) per post-60 pre-78 event (\$140) per post-60 pre-78 event
Firm Certification	Yes Yes, large scale jobs only No	* Scenario 2 * Minimal cost reduction (\$21,000,000/yr.)	* Scenario 2 * Minimal cost reduction (\$92) per firm, annualized
Individual Training and Certification.	Training for all workers, no certification Both training and certification for all workers Train and certify supervisors only No training or certification	* Scenario 2 * \$39,000,000/yr. (\$151,000,000/yr.) (\$191,000,000/yr.)	* Scenario 2 * \$26 per ave. employee, annualized (\$121) per ave. non-superv. empl., annualized (\$128) per ave. employee, annualized
Accreditation	Yes No	* Scenario 2 * (\$200,000/yr.)	* Scenario 2 * (\$400) per training provider, annualized
Work Practices	Performance Prescriptive None	* Scenario 2 * \$576,000,000/yr. No change if clearance required -	* Scenario 2 * \$26 per event No change if clearance required
Prohibited Practices	Abatement restrictions, dry scrape and flame OK with clearance Abatement restrictions Abatement restrictions, dry scrape and flame OK No restricted practices	* Scenario 2 * Unknown Unknown Unknown	* Scenario 2 * Unknown Unknown Unknown
Exterior Clearance	Visual Soil sampling (in lieu of visual clearance) None	* Scenario 2 * \$393,000,000/yr. (\$787,000,000/yr.)	* Scenario 2 * \$100 per exterior event (\$50) per exterior event
Interior Clearance	Dust testing after major events (in lieu of DT after major events) Dust testing after all events Visual after all events (in lieu of DT after major events) Visual after major events (in lieu of DT after major events) None	* Scenario 2 * \$1,399,000,000/yr. (\$675,000,000/yr.) (\$258,000,000/yr.) (\$773,000,000/yr.)	* Scenario 2 * \$150 per minor interior event (\$50) per major + (\$150) per minor int. event (\$50) per major interior event (\$150) per major interior event



**TRAINING PROVIDERS:**

Course Accreditation Fee: \$1,595 estimated fee for 4 yr accreditation  
 \$ 429 annualized @ 3%

**MULTIFAMILY PROPERTY OWNERS:**

Work practice costs for in-house crew:\*\*\* Int: \$65 per *rental unit*, per renovation event  
 Ext: \$43 per *building*, per renovation event  
 Ave: \$196 per *building*, per year\*\*\*\*

\*\*\* To the extent that MF property owners hire external firms to complete work, the impact is considered indirect and should not be included in this analysis. These entities may also be subject to costs related to employee training as outlined above.

\*\*\*\* Average of one exterior and 2.35 interior events per building per year. Assumes a worse case scenario in which all R&R work is done by "in-house" crews (see above note).

## Attachment 8: Recent Studies Addressing the Effectiveness of Cleanup Procedures

### **\* EPA's Renovation and Remodeling (R&R) Study, Phase I (The Environmental Field Sampling Study- published 1997)**

This study examined two cleanup procedures that are commonly employed by R&R contractors for post-job cleanup: broom sweeping and shop-vacuuming. Two work practices were used to generate lead contaminated dust and debris: drilling of painted wood, and power sanding of surfaces painted with lead-based paint. These two activities were chosen because they produce dust and debris that spans the range of particle sizes typically generated by various R&R work activities. Post-cleanup samples were compared to pre-cleanup samples. The data indicate that both types of cleanup are capable of removing as much as 99% and sometimes more of the lead produced during R&R. Most important, both broom sweeping and shop-vacuuming consistently fail to reduce floor dust-lead levels to below 100 ug/ft<sup>2</sup> and often leave dust-lead at many times this level. In some cases these cleanup techniques actually help redistribute dust to more remote areas, causing lead levels to increase away from the immediate work area.

### **\* Evaluation of the Clean-up of Lead Paint Dust in Houses (This study was conducted for the Canada Mortgage and Housing Corporation by Pinchin Environmental Consultants Ltd.- published 1995)**

Renovation projects in older houses may disturb and release lead from lead-based paint (LBP), so that effective clean-up is essential. The effectiveness of four cleaning methods used for the clean-up of LBP dust from floors in houses was evaluated. A total of 20 test rooms were identified in 9 houses in Windsor, Ontario. The presence of LBP was determined by on-site XRF measurements and laboratory chemical analysis of paint samples. The test rooms were isolated and areas of LBP were power-sanded to create dust containing LBP. Following a settling period, the floors were cleaned of dust using one of four methods. These methods included commonly used household cleaning methods, as well as specialized cleaning agents and procedures developed for clean-up after lead paint abatement.

The four cleaning methods were:

#### Method 1

- Step 1. Sweep the floor dry with a corn broom.
- Step 2. Vacuum the floor with a utility vacuum (shop vacuum).

#### Method 2

- Step 1. Vacuum the floor with household vacuum cleaner.
- Step 2. Mop the floor with a commercial household cleanser.

#### Method 3

- Step 1. Vacuum the floor with a utility vacuum (shop vacuum).
- Step 2. Mop the floor with a 2% solution of Ledizolv (a commercial lead-cleaning product).
- Step 3. Rinse the floor with clean water.

#### Method 4

- Step 1. Vacuum the floor with a High Efficiency Air filtered (HEPA) vacuum.

- Step 2. Mop the floor with a Tri-Sodium Phosphate (TSP) cleaner, 2 tablespoons per gallon of water.
- Step 3. Rinse the floor with clean water.
- Step 4. Vacuum the floor with a HEPA vacuum.

The degree of lead contamination on the floors was determined by wipe samples taken before and after cleaning (following the HUD protocol for surface sampling and analysis). (See Figure 1.)

The post clean-up wipe samples showed that Cleaning Methods 1 and 2 were generally inadequate to meet the cleanliness criteria of 200 ug/ft<sup>2</sup>. (Five out of 10 rooms were above 200 ug/ft<sup>2</sup> and the remaining 5 rooms were all well above 100 ug/ft<sup>2</sup>.) This indicates that cleaning techniques as currently practiced in Canadian households are not adequate to reduce lead levels below the ug/ft<sup>2</sup>. Cleaning Methods 3 and 4 did, in all cases but one, succeed in reducing lead in floor dust below 100 ug/ft<sup>2</sup>. (One room was slightly above 100 ug/ft<sup>2</sup>.)

**\* Achieving Dust Lead Clearance Standards After Lead Hazard Control Projects: An Evaluation of the HUD-Recommended Cleaning Procedure and an Abbreviated Alternative. This study was conducted jointly by the National Center for Lead-Safe Housing, ERT Associates, Vermont Housing and Conservation Board, and the Dep't of Environmental Health, University of Cincinnati.- published 1999)**

This study evaluated the effectiveness of two cleaning protocols: (1) the HUD-recommended three-step procedure, and (2) an abbreviated two-step cleaning procedure.

The three step process involved:

- Step 1. An initial vacuuming using a HEPA filter vacuum.
- Step 2. A wet wash with a lead cleaner.
- Step 3. A second HEPA vacuuming.

The two step procedure involved:

- Step 1. An initial vacuuming using a HEPA filter vacuum.
  - Step 2. A wet wash with a lead cleaner.
- (The two step procedure omitted the final HEPA vacuum.)

Cleaning procedures were evaluated in 27 dwelling units that had undergone significant lead hazard control interventions likely to produce lead dust. Dust lead samples were collected on floors and in window sills and troughs prior to the lead control hazard intervention, after the wet wash step of the cleaning procedure, and after completion of the second HEPA vacuuming. The results of the study demonstrate that dust lead surface loading on smooth and cleanable surfaces following the three-step and two-step cleaning procedures can achieve levels below 100 ug/ft<sup>2</sup> 96% of the time for both the three step and two step procedures. The three step procedure was found to clean to below 50 ug/ft<sup>2</sup> 94% of the time. The two step procedure yielded lead levels below 50 ug/ft<sup>2</sup> 90% of the time.

#### **Cleaning Studies that are Now in Progress.**

\* HUD is funding two studies that are relevant to cleaning of LBP surfaces and lead dust.

(1) St. Louis University School of Public Health is conducting a study where LBP surfaces are mechanically abraded and then wipe sampled with a mechanical wiper. This study should provide some additional information about the utility of wipe sampling techniques for evaluating lead exposure potential from damaged surfaces.

(2) New Jersey School of Medicine and Dentistry at Rutgers is conducting a field study involving the cleaning of homes where EBL children live. Several cleaning procedures are being systematically evaluated in this field study including, household and HEPA vacuuming, and detergent and TSP mopping. No data is available at this time. The actual collection of field data is expected to be complete by January 2000.

\* The State of California is conducting a field study comparing four different types of vacuum cleaners.

\* A study of particle penetration through vacuum bags is currently being conducted at the University of Cincinnati. Claus Willeke is the principal investigator on this effort.

### Attachment 9: Comparison of Pre- and Post-1960 Housing Stock

All of the values in the table below, except those preceded by ~, are taken directly from HUD's *Comprehensive and Workable Plan for the Abatement of Lead-Based Paint in Privately Owned Housing (CWP)*. The ~ values are calculated from the CWP.

Element	1960 - 1978 stock	Pre- 1960 Stock	Totals
Total number of units	35,681,000	41,494,000	77,177,000
Total amount of interior LBP	2,509 m sq. ft.	20,100 m sq. ft.	22,609 m sq. ft.
Amount of interior LBP/ housing unit w/ LBP	157 sq. ft.	~857 sq. ft.	580 sq. ft.
Total amount of exterior LBP	7,811 m sq. ft.	34,905 m sq. ft.	42,715 m sq. ft.
Amount of exterior LBP/ housing unit w/ LBP	521 sq. ft.	~1116 sq. ft.	909 sq. ft.
Total amount of interior LBP intact	2,053 m sq. ft.	17,965 m sq. ft.	20,018 m sq. ft.
Total amount of interior LBP non-intact	455 m sq. ft.	1,500 m sq. ft.	1,955 m sq. ft.
Average Amount of interior LBP intact / housing unit	139 sq. ft.	~722 sq. ft.	NA
Average amount of interior LBP non-intact / housing unit	31 sq. ft.	~ 67 sq. ft.	NA
Total amount of exterior LBP intact	7,248 m sq. ft.	27,354 m sq. ft.	34,602 m sq. ft.
Total amount of exterior LBP non-intact	562 m sq. ft.	7,489 m sq. ft.	8,051 m sq. ft.
Average amount of exterior LBP intact / housing unit	481 sq. ft.	~848 sq. ft.	NA
Average amount of exterior LBP non-intact / housing unit	37 sq. ft.	~232 sq. ft.	NA

### Comparison of Pre- and Post-1960 Housing Stock at Various Lead-Based Paint Concentrations

All of the values in the table below are from HUD's *Comprehensive and Workable Plan for the Abatement of Lead-Based Paint in Privately Owned Housing (CWP)*.

<b>LBP Concentration</b>	<b>1960 - 1978 stock Number of Units</b>	<b>Pre- 1960 Stock Number of Units</b>	<b>Total Number of Units</b>
>0.7 ug/cm <sup>2</sup>	28,545,000	37,475,000	66,020,000
>1.0 ug/cm <sup>2</sup>	22,149,000	35,297,000	57,370,000
>1.2 ug/cm <sup>2</sup>	16,770,000	31,756,000	48,443,000
>2.0 ug/cm <sup>2</sup>	6,423,000	26,341,000	32,888,000

31

**DRAFT DO NOT QUOTE OR CITE**

# **Lead Dust Minimization Work Practices for Renovation, Remodeling and Repainting**

## **Draft Issues Paper**

**US Environmental Protection Agency  
Office of Pollution Prevention and Toxics**

**Prepared by**

**The National Center for Lead-Safe Housing  
10227 Wincopin Circle, Suite 205  
Columbia, MD 21044**

**Under Prime Contract #68-W7-0070  
Subcontract #EPAOPPT-TNC-001 for**

**ICF Incorporated  
8300 Lee Highway  
Fairfax, VA 22031-1207**

**September 29, 1998**

## DRAFT DO NOT QUOTE OR CITE

### Introduction

This paper discusses Key Issues associated with the development of lead dust minimization practices during renovation, remodeling, and repainting activities. The issues were identified because they could arise in many types of situations and/or have a significant affect on EPA's development of federal policies related to such activities. This *Issues Paper* was developed initially for and includes comments from members of an Informal Technical Work Group (Work Group) convened by The National Center for Lead-Safe Housing (The National Center), under contract to ICF Incorporated (ICF), as part of a work assignment issued by the US Environmental Protection Agency (EPA).

The Work Group met on June 2, 1998 in Fairfax, Virginia to discuss this document (formerly titled *Lead Dust Minimization Work Practices for Renovation, Remodeling and Repainting: Discussion Document*) and the companion *Lead Dust Minimization Work Practices for Renovation, Remodeling and Repainting: Draft Technical Manual (Draft Technical Manual)*. The *Draft Technical Manual* presents a set of technical specifications for renovation, remodeling and repainting activities that describe precautions needed to ensure that lead-contaminated dust and debris are minimized, controlled and properly cleaned-up. Two exhibits from the *Draft Technical Manual* that help to illustrate the current approach to describing lead dust minimization work practices are included in this document.

**The information contained in this *Issues Paper* does not necessarily represent the Agency's position on renovation or remodeling work practices. EPA is in the process of refining the *Draft Technical Manual* and intends to use the *Issues Paper* to resolve important policy considerations. As such, this document discusses preliminary thoughts about key issues.**

### Overview of Potential Lead-Related Health Concerns from Renovation, Remodeling and Repainting Activities

Renovation, remodeling and repainting activities conducted in older homes pose a considerable lead exposure health risk. Both the workers engaged in these activities as well as the occupants of the building undergoing the work may be exposed to dangerous levels of lead. Lead-based paint is one source of lead exposure. It is found in more than half of the US housing stock, including three quarters of the housing units built before 1978. In addition to paint, the fine dust and debris that has accumulated behind woodwork, walls and trim may also contain lead which can be released during these activities.

When small children ingest lead-contaminated dust, lead poisoning may result. Children, particularly those under age six, are exposed to lead dust as a result of crawling on the floor or playing with toys and then engaging in normal hand-to-mouth activity (e.g., eating food or mouthing a toy). Lead poisoning can cause learning disabilities, permanent damage to the nervous system, reductions in intelligence and attention span, stunted growth and behavioral problems. Lead can also have consequences for adults. For example, breathing or ingesting

## DRAFT DO NOT QUOTE OR CITE

harmful levels of lead dust can cause hypertension and infertility in men and miscarriages in pregnant women. Extreme lead poisoning can result in comas and death.<sup>1</sup>

Although specific sources and mechanisms of lead exposure from renovation, remodeling and repainting are not entirely understood, there is little doubt that dust control is the key to reducing this exposure. A wide variety of simple tasks can create lead-contaminated dust and debris that may pose a serious health risk to building occupants and project workers. For example, a recent EPA study on lead exposures during renovation and remodeling documented high airborne and settled lead dust levels after common activities, such as surface preparation for repainting, cutting using an electric saw and interior demolition.<sup>2</sup> The National Institute for Occupational Safety and Health (NIOSH) has also found similar exposures.<sup>3</sup> Minimizing the dust produced and released by this work will reduce potential lead exposures.

### Relationship to Existing EPA Regulations

The Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X) directs EPA to develop regulations under the Toxic Substances Control Act (TSCA) Section 402(a) which create standards for conducting lead-based paint activities that include abatement. EPA has already promulgated final regulations for such activities in target housing and child occupied facilities (40 CFR Part 745). These regulations require that individuals conducting lead-based paint inspections, risk assessments and abatement be properly trained and certified and that the work be performed in accordance with the standards set forth in the rule. The work practice standards for abatement include:

- providing notice of the commencement of work;
- developing an occupant protection plan;
- restricting selected work practices due to the potential risk of excessive lead contamination;
- procedures for soil abatement; and
- dust and soil clearance testing requirements.

TSCA Section 402(c) directs EPA to address renovation and remodeling activities by first conducting a study to determine the extent to which persons engaged in various types of these activities in target housing are exposed to and/or disturb lead and create a lead-based paint hazard. Once EPA completes that study, TSCA Section 402(c) further directs EPA to use the results of the study and consult with stakeholders to determine which renovation and remodeling activities should be subject to the regulations under TSCA Section 402(a). EPA must then revise

---

<sup>1</sup> Sussell, Aaron, et al, January 1998, "Protecting Workers Exposed to Lead-Based Paint Hazards," (NIOSH Publication #98-112), p. 1-5.

<sup>2</sup> EPA, May 1997, *Lead Exposure Associated with Renovation and Remodeling Activities: Summary Report*, p. 19.

<sup>3</sup> Sussell, Aaron, et al, January 1998, "Protecting Workers Exposed to Lead-Based Paint Hazards," (NIOSH Publication #98-112), p. 1-5.

## DRAFT DO NOT QUOTE OR CITE

the TSCA Section 402(a) regulations for abatement activities and apply them, if appropriate, to renovation and remodeling activities.

### Key Issues

In developing the *Draft Technical Manual*, various issues were identified that could arise in multiple renovation, remodeling and repainting situations and/or have significant potential policy implications. These Key Issues are presented in this document. Each Issue is first introduced in the form of a question; then, information relevant to the Issue is briefly described and the applicable current recommendations from the *Draft Technical Manual* are presented. The eight Key Issues are:

1. What are the implications of extending the restrictions on specific lead abatement techniques to renovation, remodeling and repainting tasks? How commonly are the restricted tasks used or performed in typical renovation, remodeling or repainting projects?
2. What levels of lead-contamination do uncontrolled water or hydro-blasting and power washing create? What types of precautions are necessary to minimize worker and occupant exposures to such contamination?
3. When is it appropriate to work wet? Is the answer the same for interior and exterior tasks?
4. What levels of lead-contaminated dust are created by carpet removal? What types of precautions are appropriate to minimize worker and occupant exposure to such dust?
5. Under what circumstances should a vacuum equipped with a High Efficiency Particulate Air (HEPA) filter be recommended for post-renovation cleaning procedures?
6. When should dust testing be recommended and who should collect the samples?
7. Should contractors be permitted to “opt-out” of specified lead dust minimization work practice requirements by meeting a performance standard?
8. When is soiling testing appropriate? Who should collect the samples? How many samples are needed?

\* \* \* \* \*

**DRAFT DO NOT QUOTE OR CITE**

**1. What are the implications of extending the restrictions on specific lead abatement techniques to renovation, remodeling and repainting tasks? How commonly are the restricted tasks used or performed in typical renovation, remodeling or repainting projects?**

EPA regulations for lead-based paint abatement restrict or prohibit the use of the following work practices during abatement in target housing and child-occupied facilities:

- open flame burning or torching of lead-based paint is prohibited;
- machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint is prohibited unless used with a HEPA exhaust control;
- dry scraping of lead-based paint is permitted only in conjunction with heat guns or around electrical outlets or when treating defective paint spots totaling no more than 2 square feet in any one room, hallway or stairwell or totaling no more than 20 square feet on exterior surfaces; and
- operating a heat gun on lead-based paint is permitted only at temperatures below 1,100 degrees Fahrenheit (40 CFR 745.227(e)(6)).

These practices are either restricted or outright prohibited because they generate excessive levels of lead-contaminated dust. The resulting lead exposures can pose a very dangerous health risk to residents, particularly young children, which can not be properly controlled.

If these same procedures were used on surfaces with lead-based paint during renovation, remodeling or repainting activities, similarly harmful levels of lead dust could be created. Unlike lead-based paint abatement, however, renovation work does not always focus on paint removal but often involves more limited actions that only disturb surfaces with lead-based paint.

The *Draft Technical Manual* currently includes the same work practice restrictions as those in EPA's lead-based paint abatement work practice standards. The Agency is aware of concerns over the feasibility of prohibiting or severely restricting common practices when cost-effective alternatives are not perceived to exist. Technical experts contacted during the development of this *Issues Paper* and members of the Work Group provided useful insights into the potential implications of prohibiting or restricting the above listed practices during renovation, remodeling and repainting work.

**A. Open Flame Burning, Torching, or Using a Heat Gun Operating At Greater Than 1,100°F**

These methods are typically used to remove loose and non-intact paint during the initial stages of repainting. But while open flame burning or torching is routinely performed on exterior surfaces, it is rarely carried out on interior surfaces. On the other hand, heat guns are commonly used on both on interior and exterior surfaces. Several studies have documented that the high temperatures generated when using these tools can create harmful levels of lead fumes and very

## DRAFT DO NOT QUOTE OR CITE

small lead bearing particles that can be deposited on floors and horizontal surfaces.<sup>4</sup> In developing the EPA work practice standards for lead-based paint abatement activities, an overwhelming majority of those providing comments on the issue of restricted practices urged the Agency to expressly ban the use of open flame burning or torching to remove lead-based paint during lead abatement in target housing (61 FR 45795, 8/29/95).

Prohibitions on open flame burning and torching exist in other settings. For example, HUD prohibited open flame burning of lead-based paint in public housing in 1986.<sup>5</sup> In 1996, the state of Vermont passed legislation that prohibits open flame burning during exterior repainting activities on surfaces coated with lead-based paint. Since the Vermont prohibition went into effect, the state Health Department has received few consumer complaints about contractors using this restricted practice. The City of San Francisco, California recently passed an ordinance prohibiting open flame burning or torching on buildings constructed before 1978 unless the paint is shown not to be lead-based.

Several painting contractors who were members of the Work Group have stated that the industry is reducing its use of these burning techniques because of the risk of fire and the availability of safer alternative methods (e.g., power washing in combination with machine sanding and hand scraping). However, these contractors also report that they are frequently asked to use open flame torches to remove paint because consumers believe the method is the most effective means of creating a smooth surface for repainting. Some painting and renovation contractors have suggested that alternatives to open flame burning or torching on exteriors may not achieve the same smooth finish and can be more expensive.

When asked whether open flame burning, torching or use of a heat gun operating at greater than 1,100°F should be a prohibited activity or be permitted with some degree of lead dust minimization and control, two-thirds of the Work Group members supported the prohibition for interior work but one-third felt that it could be permitted if contractors followed the lead dust minimization work practices for Level 4: Extreme Lead Dust-Generating Tasks as found in the *Draft Technical Manual*. Conversely, for exterior work, two-thirds of the members felt that the activity could be permitted if Level 4 work practices were followed but one-third of the members continued to support the prohibition.

### B. Machine Sanding or Grinding Without a HEPA Vacuum Attachment

Machine sanding is a common surface preparation method.<sup>6</sup> Machine sanders are typically used to:

- remove loose paint (usually from exterior surfaces);
- smooth rough edges of paint before priming; and

---

<sup>4</sup> U.S. EPA. 1995. *A Review of Studies Addressing Lead Abatement Effectiveness*. (EPA 747-R-95-006)

<sup>5</sup> 24 CFR 35.24

<sup>6</sup> NIOSH, 1997. *Protecting Workers Exposed to Lead-Based Paint Hazards*, p.16.

## DRAFT DO NOT QUOTE OR CITE

- Rough up the top layer of intact paint prior to repainting to improve paint adhesion.

Painters have historically used machine grinders to remove loose paint from exterior surfaces (e.g., wood clapboard) during the initial stages of surface preparation for repainting. More recently, tool manufactures have developed abrasion disks for machine sanders that effectively remove loose paint. Several Work Group members who are painting contractors indicate that disk sanders are generally less expensive than grinders and, hence, are more commonly used. Grinders or abrasive disk sanders are not typically used on interior surfaces because they can leave too rough a surface to meet most consumer expectations.

A second use of machine sanders is to smooth (i.e., feather) paint edges after the loose paint is removed. In this setting, the sander is used on a limited surface area before applying a primer and then repainting either interior or exterior surfaces.

Lastly, machine sanders can also be used to rough up the top layer of intact paint prior to repainting. This is done to achieve better paint adhesion but not to remove paint. (Table 1 on page 10 identifies alternative methods for these three uses of machine sanders.)

Several studies have shown that extremely high dust lead levels can be created by machine sanding to remove loose and intact paint, thereby causing an increase in children's blood lead levels.<sup>7</sup> EPA received numerous comments on its final lead-based paint abatement regulations supporting restrictions on the use of machine sanding or grinding during abatement in target housing (61 FR 45795, 8/29/95). However, these studies and comments did not address the potential health risks associated with using machine sanders to feather paint edges or to rough up the top layer of paint.

Work Group members noted that machine sanding and grinding tools used on exterior surfaces typically do not come equipped with a dust collection device. These tools can therefore generate substantial dust and debris. But some machine sanders designed to smooth painted surfaces can be purchased with dust collection bags. There is very limited data on the effectiveness of these types of collection devices. Anecdotal reports from one painting contractor, however, suggest that airborne lead levels well in excess of the current Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter (50  $\mu\text{g}/\text{m}^3$ ) can be generated even when using a machine sander with a collection device. The California Painters Project has experimented with retrofitting various machine sanders with a variety of dust collection and filtering devices that reduced airborne lead levels by 85 to 90 percent. Other contractors also report that retrofitting machine sanders can effectively reduce

---

<sup>7</sup> Amitai, Y., Brown, M.J., Graef, J.W., and Cosgrove, E. 1991. "Residential Deleading: Effects on the Blood Lead Levels of Lead Poisoned Children." *Pediatrics*. 88(5):893-897. Farfel, M.R., and Chisolm, J.J.Jr. 1990. "Health and Environmental Outcomes of Traditional and Modified Practices for Abatement of Residential Lead-Based Paint." *American Journal of Public Health*. 80(10):1240-45. Jacobs D. 1998. "Occupational Exposures to Lead-Based Paint in Structural Steel Demolition and Residential Renovation." *International Journal of Environment and Pollution*. 9(1):126-139, Interscience Enterprises, United Nations Educational, Scientific and Cultural Organization, Switzerland. EPA, May 1997, *Lead Exposure Associated with Renovation and Remodeling Activities: Summary Report*.

## DRAFT DO NOT QUOTE OR CITE

lead dust emissions. However, a NIOSH representative noted that there are no studies documenting how well machine sanders equipped with a HEPA vacuum attachment or dust collection bags work in residential settings.

Work Group members had mixed reactions to banning the use of machine sanders and grinders on exterior surfaces to remove loose paint. Many acknowledged the potential airborne lead levels that could be created by such work but recognized the difficulty in erecting cost-effective containment structures. However, a number of members opposed the outright prohibition of machine sanding or grinding for feasibility reasons, noting that in some settings no suitable alternative method exists. For example, one likely alternative to machine sanders used to remove loose paint are sanders equipped with HEPA vacuum attachments. But HEPA sanders only work well on flat surfaces and are not appropriate when sanding gingerbread or round surfaces.

Several Work Group members felt that it might be possible to contain the dust generated by machine sanding in interior settings if proper containment and clean-up were performed.

Painting contractors who participated in the Work Group also noted that banning the use of machine sanders and/or grinders will drive up the costs of surface preparation. In the competitive painting industry, any increase in price due to health and safety reasons will inevitably result in some contractors undercutting the cost by not using the more expensive tool or procedure. Work Group technical experts also noted that prohibitions might have liability implications. Liability concerns could motivate contractors to follow the safer work practices. Alternatively, insurers might not cover liability claims arising out of prohibited activities such as machine sanding.

In general, 40 percent of the Work Group members felt that interior machine sanding should remain a prohibited task while 60 percent of the members supported its being permitted when contractors follow the lead dust minimization work practices for Level 4: Extreme Lead Dust-Generating Tasks as found in the *Draft Technical Manual*. However, for exterior machine sanding, all but one of the members were in favor of permitting this activity when Level 4 lead dust minimization work practices are followed.

### C. Machine Sanding of Floors

Machine sanding of floors is performed to make the surface smooth and/or to remove varnish, stain or paint before refinishing or repainting. Varnishes and stains were more commonly used on interior floors than paint. Paint was more frequently used on porches and other exterior floor surfaces. The maximum lead content in clear varnishes is unlikely to exceed 1% while the lead content in paint was often far greater (i.e., up to 70%).<sup>8</sup> Although a 1% lead concentration in varnishes would exceed the current federal definition for lead-based paint (i.e., 0.5% lead), some varnishes may have levels below 0.5%. A paint and coatings industry representative reported that lead 2-naphthalene-sulfonate was a frequently used drier that constituted a maximum of 1% of

---

<sup>8</sup> Parker, Dean. 1965. *Principles of Surface Coating Technology*, Interscience Publishers, NY, NY, p.235.

## DRAFT DO NOT QUOTE OR CITE

the dry weight of the paint or varnish film. Since this drier contained only about one-third lead, a more typical maximum dry lead content would have been 0.3%.<sup>9</sup>

Renovation industry contractors, state health officials, and health researchers report that machine sanding of floors can produce substantial dust but that this dust can be contained if appropriate precautions are taken. Work Group participants generally agreed that there are no cost-effective alternative methods to prepare floors for refinishing or to strip paint or varnish from interior floors. (Table 1 suggests that the one current alternative to using a machine sander on floors, onsite chemical stripping and wet scraping, is substantially more expensive.) While it may be possible to retrofit a floor sander with a HEPA vacuum attachment or other type of filtering system to capture dust, this equipment is not currently available for retail sale. Several technical experts encouraged EPA to provide incentives for tool manufacturing companies to develop such a device. Work Group members strongly suggested that machine sanders not be prohibited when refinishing floors and, instead, be permitted when used with appropriate dust containment, clean-up procedures, and final dust testing. In fact, each member supported moving this activity from the prohibited practices list into Level 4: Extreme Lead Dust-Generating Tasks as found in the *Draft Technical Manual*.

### D. Uncontrolled Abrasive Blasting or Sandblasting

Traditional abrasive blasting or sandblasting is rarely used on residential structures. The US Department of Housing and Urban Development's (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (Guidelines)* note that these methods can produce widespread dust contamination and full containment is nearly impossible to maintain and guarantee in a residential environment. Comments to EPA on the proposed lead-based paint abatement standards also supported the restrictions on abrasive blasting or sandblasting to remove paint during abatement of target housing (45795 FR 61). But one member of the Work Group stated that abrasive blasting could be performed if the proper containment is erected to control debris and wastewater. For example, a wet blasting technology allows for a wet matrix to be created that keeps airborne lead levels below detection. A number of Work Group members were amenable to moving this activity from the prohibited practices list to Level 4: Extreme Lead Dust-Generating Tasks, as found in the *Draft Technical Manual*, when lead dust minimization work practices are followed.

### E. Dry Hand Scraping of Interior and Exterior Surfaces

Dry hand scraping is a commonly used technique to remove non-intact paint. It is employed during the initial stages of surface preparation on both exterior and interior surfaces. Painting contractors indicate that this method is extremely effective at preparing a surface for repainting since it leaves a relatively smooth surface that can be sanded before applying fresh paint.

---

<sup>9</sup> Based on information supplied by Stephen Sides, National Paint and Coatings Industry, July 1998.

## DRAFT DO NOT QUOTE OR CITE

Dry scraping can generate airborne lead levels that can create potential health risks to workers.<sup>10</sup> However, these airborne lead levels are generally lower than those created when a machine sander or grinder is used.<sup>11</sup>

One likely alternative method to dry scraping is wet scraping. The HUD *Guidelines* recommend wet scraping as a preferred method because the water is likely to reduce the dispersal of lead-contaminated dust and debris. In fact, a NIOSH study of lead-based paint cleaning activities in buildings with highly deteriorated paint found that using wet methods reduced worker exposures. These wet methods did not, however, totally eliminate hazardous lead-based paint exposures to workers.<sup>12</sup>

Some contractors and technical experts have significant concerns over restrictions that would require scraping to be performed wet. Data gathered by NIOSH suggests that wet scraping methods are not effective at minimizing lead dust and debris. A Work Group member who is a NIOSH representative speculated that this may be so because only the top layer of paint is wetted and the lower layers of paint, which are more likely to contain lead, are not affected. One renovation contractor who has practiced “working wet” believes that simply adding moisture during scraping does not necessarily reduce the spread of dust and debris. The NIOSH representative also suggested that while wet scraping may reduce occupant exposures to lead, both dry and wet scraping are likely to create worker exposures. Based on these observations, this representative did not support the prohibition of dry scraping.

Several Work Group members who are painting contractors have raised concerns that requiring wet scraping could prove cumbersome for workers, particularly those working on ladders who would be required to carry an additional piece of equipment (e.g., a backpack water mister). Additionally, some contractors contended that using water would raise the grain of wood, making it difficult to achieve a smooth finish or causing paint to bubble when a primer is applied directly to a moist wood surface. To avoid these complications, a painter would have to wait for the surface to dry before final sanding and repainting. (A more comprehensive discussion of the implications of working wet is provided in Key Issue #3.)

All but two of the Work Group members supported changing interior dry hand scraping from a prohibited task to an acceptable task when used with either the Level 4: Extreme Lead Dust-Generating Tasks, Level 3: Substantial Lead Dust-Generating Tasks or even Level 2: Moderate Lead Dust-Generating Tasks lead dust minimization work practices as found in the *Draft Technical Manual*. For exterior dry hand scraping, two members felt that the practice should remain prohibited while the balance felt that it could be permitted with either Level 4, Level 3 or even Level 2 work practices.

---

<sup>10</sup> NIOSH, 1997. *Protecting Workers Exposed to Lead-Based Paint Hazards*. EPA, May 1997, *Lead Exposure Associated with Renovation and Remodeling Activities: Summary Report*.

<sup>11</sup> NIOSH, 1997. *Protecting Workers Exposed to Lead-Based Paint Hazards*.

<sup>12</sup> NIOSH, 1997. *Protecting Workers Exposed to Lead-Based Paint Hazards*.

## DRAFT DO NOT QUOTE OR CITE

### F. Dry Hand Sanding of Interior and Exterior Surfaces

Dry hand sanding is typically performed once any loose paint is removed to smooth the paint edge between areas where paint was removed and where it was left intact. This technique is called “feathering.” Feathering is conducted on both building interiors and exteriors before applying primer paint. It is generally limited to relatively small surface areas on a given substrate (e.g., spot sanding). Dry hand sanding is also used to rough up the top layer of intact paint to increase the adhesion of any new paint.

Several Work Group members cautioned against prohibiting this practice because they believe that any dust generated can be successfully contained and cleaned-up, and that most dry hand sanding only affects the top layer of paint (which is typically not lead-based). Painting contractors raised concerns over wet sanding instead of dry sanding. They cautioned that working wet on wood surfaces could raise the grain, leaving a rough surface for repainting. But other Work Group members indicated that wet sanding, when feasible, reduces the spread of lead dust and can be a viable alternative to dry sanding. Finally, several Work Group members noted that OSHA allows dry hand sanding and that if EPA prohibits this activity, it would create a potential conflict. (Key Issue #3 explores in greater depth the potential implications associated with working wet.)

Three members of the Work Group felt that dry hand sanding in both interior and exterior settings should remain a restricted practice. However, the balance of the members felt that this activity could be permitted when the lead dust minimization work practices for Level 4: Extreme Lead Dust-Generating Tasks, Level 3 Substantial Lead Dust-Generating Tasks or even Level 2: Moderate Lead Dust-Generating Tasks, as found in the *Draft Technical Manual*, are followed.

### G. Alternative Practices

Table 1 lists lead abatement work practices that are restricted or prohibited under EPA regulations and identifies possible alternative practices for renovation, remodeling and repainting projects. The incremental costs of these alternative practices are reflected as relative percentage increases over the average costs for the restricted or prohibited practices. (These cost estimates are based solely on one person’s anecdotal experience with residential renovation, remodeling and repainting projects.)<sup>13</sup>

This table presents a wide range of cost impacts but does not discuss the relative likelihood that any particular substitute would be used or other factors that could be considered in choosing one alternative over another, such as relative risk. For example, overall, replacing old windows rather than stripping or removing paint from them might be more cost-effective due to the better insulation qualities of new window units. The table also suggests that there may be significant potential feasibility concerns associated with prohibiting certain tools, techniques and practices. For example, one HUD lead hazard control grantee program has learned that the expense of wet

---

<sup>13</sup> Based on personal Communication with Robert Santucci, Urban Renovation Consultants, April 1998.

**DRAFT DO NOT QUOTE OR CITE**

scraping and sanding painted window surfaces results in costs that are nearly as high as window replacement.<sup>14</sup> That program has therefore chosen to pursue window replacement in lieu of repairing and repainting windows with deteriorated paint.

---

<sup>14</sup> Based on as-yet unpublished information from the HUD Lead Hazard Control Grant Program national evaluation for Baltimore's lead abatement action program.

## DRAFT DO NOT QUOTE OR CITE

Table 1: Restricted or Prohibited Practices and Potential Alternative Methods

Restricted or Prohibited Abatement Work Practices	Alternative Practices for Renovation, Remodeling and Repainting
open flame burning or torching to remove paint to the bare substrate	<ul style="list-style-type: none"> <li>• heat gun operating below 1,100°F: + 10%</li> <li>• on-site chemical stripping: + 20%</li> <li>• wet scraping and wet sanding: + 20%</li> <li>• off-site chemical stripping: + 25%</li> <li>• component replacement: + 0 to 200%</li> <li>• siding or other enclosure: + 10 to 30%</li> <li>• mechanical sanding with a HEPA vacuum attachment: + 100%</li> </ul>
machine sanding to strip floors of varnish, stains or paint	<ul style="list-style-type: none"> <li>• on-site chemical stripping and wet scraping: +40%</li> </ul>
machine sanding/grinding to remove loose paint during <i>exterior</i> surface preparation for repainting	<ul style="list-style-type: none"> <li>• power washing with limited hand scraping and sanding: +10 to 20%</li> <li>• mechanical sanding with a HEPA vacuum attachment: +20% (not possible on all surfaces)</li> <li>• limited dry scraping and sanding of small areas: +10% (not possible for large jobs)</li> <li>• wet hand scraping and wet hand sanding: +20%</li> <li>• chemical stripping (on and off-site): +200%</li> <li>• component replacement: +200%</li> </ul>
machine sanding/grinding to remove loose paint during <i>interior</i> surface preparation for repainting	<ul style="list-style-type: none"> <li>• mechanical sanding with a HEPA vacuum attachment: +20% (not possible on all surfaces)</li> <li>• limited dry scraping and sanding of small areas: +10% (not possible for large jobs)</li> <li>• wet hand scraping and wet hand sanding: +20%</li> <li>• chemical stripping (on and off-site): +200%</li> <li>• component replacement: +200%</li> </ul>
machine sanding to smooth or feather paint edges	<ul style="list-style-type: none"> <li>• limited dry sanding of small areas: +10%</li> <li>• wet hand sanding: +20%</li> </ul>
machine sanding to rough up top layer of intact paint	<ul style="list-style-type: none"> <li>• limited dry sanding of small areas: +10%</li> <li>• wet hand sanding: +20%</li> </ul>
dry scraping or hand sanding large areas during preparation for repainting (more than 2 ft <sup>2</sup> per room on interior surfaces; more than 20 ft <sup>2</sup> on exterior surfaces)	<ul style="list-style-type: none"> <li>• wet scraping and wet sanding: + 20%</li> <li>• mechanical sanding with a HEPA vacuum attachment: +20%</li> <li>• chemical stripping (on and off-site): + 200%</li> <li>• component replacement: + 200%</li> </ul>

**DRAFT DO NOT QUOTE OR CITE**

**2. What levels of lead-contamination do uncontrolled water or hydro-blasting and power washing create? What types of precautions are appropriate to minimize worker and occupant exposure to such contamination?**

Water or hydro-blasting is performed to remove most if not all intact and loose paint from building exteriors. On the other hand, power washing is intended to clean the surface by removing any loose paint and eliminating mildew and dirt during the initial phase of an exterior repainting project. Most power washing is performed using equipment typically operating at a water pressure of 2,500 to 3,000 pounds per square inch (PSI) and no more than 5,000 PSI. But water or hydro-blasting requires equipment operating at a water pressure in excess of 5,000 PSI in order to remove intact as well as loose paint. Power washing is an extremely common practice. One Work Group member from the painting industry estimated that 99% of their painting work involves power washing.

EPA's preamble to the final TSCA Section 402 rule for lead-based paint activities in target housing and child-occupied facilities noted that the Agency did not have sufficient data to demonstrate that either hydro-blasting or high pressure washing pose a lead-based paint hazard in target housing. Therefore, neither activity is currently restricted or prohibited by EPA. However, the preamble did recommend that controls be used to contain any debris or wastewater generated (61 FR 45796, 8/29/96).

The majority of the Work Group members felt that power washing and hydro-blasting should not be prohibited due to the lack of less harmful alternative methods. Most believe that power washing creates less of a worker and occupant exposure than machine sanding or grinding. However, these members noted two concerns: contamination of nearby soil due to dispersal of paint chips and run-off of lead-contaminated wastewater. One painting contractor member stated that even power washing at relatively low PSI could spread paint chips beyond the area where drop cloths are generally laid out. Another painting contractor reported using flow-through drop cloths to capture chips and then covering any remaining chips that cannot be easily removed with mulch. This member also expressed reservation over using plastic sheeting because it might create excessive heat exposure for covered shrubs and plants.

Nearly all members of the Work Group noted concerns over dealing with contaminated wastewater that can deposit lead in nearby soil or send it to the local waste treatment facility. To reduce the lead content in this wastewater, some contractors use cheesecloth to filter and then collect any paint chips. One expert noted that some states and localities require a permit to dispose of lead-bearing wastewater, which can be costly. Washington State and Oregon are reported to require contractors to obtain a special permit and use a filter system over storm drains to capture lead debris.

Chapter IV of the *Draft Technical Manual* currently classifies power washing as a Level 2: Moderate Lead Dust-Generating Task subject to the recommended lead dust minimization work practices. However, water or hydro-blasting is classified as a Level 4: Extreme Lead Dust-Generating Task requiring the appropriate lead dust minimization work practices.

## DRAFT DO NOT QUOTE OR CITE

### 3. When is it appropriate to work wet? Is the answer the same for interior and exterior tasks?

Several federal guidelines recommend that workers, before the work begins, wet painted surfaces that will be disturbed during renovation, remodeling and repainting activities. The HUD *Guidelines* recommend that prior to scraping or sanding painted surfaces, workers should mist the affected surfaces with water. The Lead-Based Paint Maintenance Training course developed by EPA and HUD directs contractors to “work wet” by misting painted surfaces before sanding, scraping or otherwise disturbing the paint. EPA’s pamphlet, “Reducing Lead Hazards When Remodeling Your Home,” and the Lead Remodeler’s Training Course (developed by HUD and the National Association of the Remodeling Industry [NARI]) include similar recommendations. The rationale for working wet is that moisture will reduce the spread of any lead-contaminated dust because the particles are heavier and, hence, settle more quickly to the floor.

Minimizing the dispersal of lead dust will, in all likelihood, reduce the area that may need containment and cleaning. However, it is unlikely that working wet will reduce the total amount of lead generated by activities such as scraping and sanding because the work still removes the same amount of paint from the substrate whether done wet or dry. A possible result is that the same amount of dust and debris will settle in a smaller area. EPA has heard that some lead hazard control contractors believe that less visible dust is spread when sanding wet versus dry, and that any dust created usually stays closer to the immediate work area. In contrast, some Work Group members explained that scraping painted surfaces can propel paint chips away from the work surface regardless of whether it is done wet or dry.

There may be cost and feasibility implications to working wet. One study has suggested that working wet can create settled dust and debris that are more difficult to clean-up than dust and debris generated in the same setting when done dry.<sup>15</sup> (Drop cloths were not used during the work and all dust and debris fell directly to a floor that was intact, smooth and easily cleaned.) Discussions with several lead hazard control contractors suggest that working wet can create debris that are messy to roll up in any plastic sheeting and that if any wet debris falls to the floor, it can be more difficult to clean-up (e.g., vacuum and mop) than dry debris and dust. Some contractors are currently experimenting with placing absorbent material on top of the plastic sheeting when working wet to restrict any wet debris.

Interviews with several renovation and repainting contractors indicate that misting surfaces before sanding or scraping would entail a substantial change in behavior. But these contractors expressed less resistance to using the equipment (e.g., wet sanding block, plant mister) and procedures associated with working wet during interior projects than when working on building exteriors because interior surface areas are generally smaller and more accessible.

Several contractors operating in Vermont (where State law requires that surface preparation be done wet when repainting buildings constructed before 1978) stated that it was feasible to mist

---

<sup>15</sup> NIOSH, HETA 92-095-2317.

## DRAFT DO NOT QUOTE OR CITE

surfaces although it did require additional time and equipment. Vermont's lead program staff, however, have received substantial feedback from the contracting industry expressing frustration over the practicality of wetting surfaces during exterior repainting. Painting contractors have raised safety concerns over carrying a mister or garden sprayer up a ladder and also explained that working wet can add time and expense to repainting jobs. Wetting a surface before scraping may eliminate the possibility of being able to apply primer paint immediately after finishing the scraping or sanding because of the time needed for the surface to dry. This can necessitate a painter having to move ladders and other equipment three times to complete the work on every wall or surface (i.e., wet scrape, prime and paint).<sup>16</sup> A California pilot project designed to help painting contractors establish lead-related safety programs found that contractors were reluctant to use alternative surface preparation methods (e.g., wet sanding) that they believe risked the fundamental quality of their work and threatened customer satisfaction. These contractors also reported that wet sanding was often problematic because it can create underlying moisture problems.<sup>17</sup>

Members of the Work Group echoed all of these concerns. Several members also explained that wet sanding or scraping painted wood surfaces can raise the grain of the wood, making it rougher and requiring further sanding before primer paint can be applied. Additionally, any remaining moisture under the new paint will ultimately cause it to bubble and lift off the surface. A further argument made against the value of wet misting before scraping or sanding is that only the top layers of paint will be wetted. These upper layers are less likely to be lead-based as opposed to the lower layers, which are not generally affected by the misting process. If required, wet misting will add time and expense to normal renovation, remodeling and repainting projects. One member stated bluntly that wet sanding and wet scraping are not realistic or feasible, and that painters will ignore this work practice if it becomes required.

Chapters III and IV of the *Draft Technical Manual* classify wet sanding and scraping as lower dust-generating tasks. Accordingly, fewer lead dust minimization precautions are recommended when the work is done wet. EPA requests additional information to further substantiate that wet misting suppresses dust and/or debris during sanding and/or scraping tasks.

#### **4. What levels of lead-contaminated dust are created by carpet removal? What types of precautions are appropriate to minimize worker and occupant exposure to such dust?**

Carpets and rugs are considered by many to be large reservoirs or "sinks" of house dust and a source of lead exposure to children when installed in older homes. In fact, a study conducted in Jersey City, New Jersey between 1992 and 1994 found that geometric mean dust lead loadings

---

<sup>16</sup> Personal communication with Karen Garbarino, Vermont Health Department, February 1998; E. Tohn, "A Preliminary Review of the Vermont Experience with Essential Maintenance Practices and Lead Disclosure," October 1997.

<sup>17</sup> From *California Painters Project: Helping Small Business Work Safely With Lead*, California Department of Health Services, Occupational Lead Poisoning Prevention Program, February 1998.

## DRAFT DO NOT QUOTE OR CITE

were six times greater on carpets than on window sills and approximately 18 times higher on carpets than on bare floors.<sup>18</sup>

However, data documenting lead dust levels created during carpet removal is limited. The HUD *Guidelines* and the Federal Lead-Based Paint Maintenance Training course both classify carpet removal as a high risk maintenance task similar to surface preparation for repainting, window repair, and component replacement. But data from housing units with lead-based paint suggest that carpet removal generally does not create airborne dust lead levels that are considered hazardous to workers by OSHA because the levels do not exceed the OSHA PEL of 50  $\mu\text{g}/\text{m}^3$ .

Several studies have attempted to establish a correlation between lead dust generation and carpet removal:

- EPA's renovation and remodeling study measured a geometric mean airborne dust lead level of 7.5  $\mu\text{g}/\text{m}^3$  when the carpet was not wet-misted before removal (14 samples).
- A HUD FHA demonstration in 1991 showed a range of airborne dust lead levels from non-detectable to 3.9  $\mu\text{g}/\text{m}^3$  (5 samples) and a range of less than 0.5  $\mu\text{g}/\text{m}^3$  to 3  $\mu\text{g}/\text{m}^3$  (8 samples) when carpeting was wet misted. (One value, 588  $\mu\text{g}/\text{m}^3$ , was considered an "outlier" due to specific circumstances of the sampling situation.)
- A NIOSH demonstration performed in Rhode Island in 1997 found a range of airborne dust lead levels from non-detectable to 2.0  $\mu\text{g}/\text{m}^3$  when carpet was removed wet (8 samples).<sup>19</sup>

Note that the above referenced results reflect task length average personal breathing zone lead concentrations and not surface lead dust deposition concentrations. EPA has also documented that small amounts of settled lead dust could be deposited during carpet removal (i.e., mean 17  $\mu\text{g}/\text{ft}^2$ ).<sup>20</sup> This level is substantially less than the current Federal guidance level for floor dust clearance (i.e., 100  $\mu\text{g}/\text{ft}^2$ ). The extent to which carpet removal creates lead dust is likely to be a function of the age of the carpet, the presence of lead-based paint in the room and dwelling unit, the condition of the lead-based paint, and levels of lead-contamination in nearby exterior soil that could be tracked into the unit.

Members of the Work Group were divided on whether lead dust minimization work practices are necessary for carpet removal. Several supported wet misting and HEPA vacuuming the carpet before wrapping in plastic and discarding it; others thought that this is impractical and unnecessary. At least one member confirmed that removing carpet in older homes can be a very dirty job, with lead being present in the dust left behind.

---

<sup>18</sup> Adgate, J.L., et al. (1995) "Lead in House Dust: Relationships Between Exposure Metrics." *Environmental Research* 25,134-147.

<sup>19</sup> U.S. EPA, May 1997, *Lead Exposure Associated With Renovation and Remodeling Activities: Summary Report*, pp.19-23; U.S. Department of Housing and Urban Development, 1991, *The HUD Lead-Based Paint Abatement Demonstration (FHA)*, Appendix J; Letter from Mr. Aaron Sussell, NIOSH to Ms. Lynn Bibeault, Rhode Island Department of Health, March 1998.

<sup>20</sup> U.S. EPA, May 1997, *Lead Exposure Associated With Renovation and Remodeling Activities: Summary Report*, pp.19-23.

## DRAFT DO NOT QUOTE OR CITE

Chapter III of the *Draft Technical Manual* currently classifies carpet removal as a moderate lead dust-generating task requiring the Level 2 lead dust minimization work practices. EPA welcomes additional comments and information on this issue.

### 5. Under what circumstances should a vacuum equipped with a HEPA filter be recommended for post-renovation cleaning procedures?

Clean-up after work that can create lead-contaminated dust and debris is critical to ensure that harmful levels of lead are removed. Appropriate cleaning procedures following lead hazard control work typically include a dry and wet cleaning procedure. Dry clean-up can be accomplished using a vacuum equipped with a special High Efficiency Particulate Air (HEPA) filter. A HEPA filter is capable of removing particles of 0.3 microns or larger from the air at 99.97% or greater efficiency. As another option, a traditional wet/dry shop vacuum equipped with a special two-stage high efficiency filter that is 99.99% effective at removing particles of 1.0 microns or larger could be recommended.<sup>21</sup> If such a "high efficiency" filter were recommended, specific criteria defining what constitutes such a filter would be necessary.

Federal regulations and related policy guidance offer relevant recommendations. The HUD *Guidelines* suggest the use of a HEPA vacuum when cleaning after renovation activities, but also state that acceptably low dust lead levels may be achieved after only a wet cleaning.<sup>22</sup> The EPA pamphlet, "Reducing Lead Hazards When Remodeling Your Home," recommends the use of a HEPA vacuum during all post-renovation cleaning activities. EPA's regulations for lead abatement and the HUD *Guidelines* discussion of cleaning required after abatement or interim controls both present a performance standard approach.<sup>23</sup> The EPA regulations require that contractors meet dust clearance levels at the conclusion of an abatement job, but do not require the use of a particular cleaning protocol or piece of equipment (40 CFR 745.227(e)(8)). The HUD *Guidelines* present a similar policy. Both the HUD *Guidelines* and the Federal Lead-Based Paint Maintenance Training course recommend using a HEPA vacuum to clean after completion of maintenance tasks likely to generate significant lead dust and debris (e.g., surface preparation for repainting). These documents do not recommend using a HEPA vacuum following tasks that are unlikely to produce high levels of lead dust (e.g., surfaces in good condition where less than two square feet of painted surface area will be disturbed).

Vacuums equipped with a HEPA filter prevent very small particles of dust from being released by the vacuum exhaust and re-contaminating the work area. EPA has documented that exhaust from vacuums with HEPA filters have a lower lead dust concentration than exhaust from normal

---

<sup>21</sup> Available through the *Craftsman Power and Hand Tools Catalog 1998-1999* for all Sears Craftsman 8, 12 and 16 gallon wet-dry shop vacuums (Sears, Roebuck & Co., Chicago, IL). Also, as per the Work Group discussion, the W.L. Gore Company of Baltimore, MD makes a high efficiency (non-HEPA) filter that it will retrofit to normal shop vacuums.

<sup>22</sup> U.S. Department of Housing and Urban Development (HUD), June 1995, *Guidelines For The Evaluation and Control of Lead-Based Paint Hazards in Housing*, p.4-7.

<sup>23</sup> 40 CFR 745.227(e)(8)

## DRAFT DO NOT QUOTE OR CITE

household vacuums. This study also noted that almost no dust passed through the vacuum cleaner bags of new household vacuums equipped with new bags (i.e., 0.02% or less of the dust sucked into the vacuum hose passed through the bag). Whether the conclusion that very little dust passes through the new vacuum cleaner bags can be extended to bags that are full and to older model vacuums has not yet been determined.<sup>24</sup>

A second element to this issue is the “pick up power” of the vacuum. Regardless of the filter used with the machine, the vacuum motor must have sufficient power to be able to capture debris and dust. Simply adding a HEPA filter to a vacuum cleaner with low power may not guarantee that sufficient lead-contaminated dust will be collected. Ultimately, however, a HEPA vacuum’s efficiency is only based on its back-end ability to trap particles, not its pick-up power.

Some contractors perceive cost and availability concerns associated with using a HEPA vacuum. Vacuums equipped with HEPA filters are currently available for prices ranging from \$190 to \$1,995; the filters alone can cost from \$65 to \$200 each for these units.<sup>25</sup> Prices are a function of the quality and durability of the machines and market demand.

Members of the Work Group generally supported the use of HEPA vacuums during renovation, remodeling and repainting activities because prices appear to have dropped and the units are more universally available. But some questioned whether, in fact, these vacuums are actually necessary.

Although no studies have been conducted that document the typical size of lead particles, a Work Group member who is a NIOSH representative suspects that they are larger than 0.3 microns. As such, use of a HEPA vacuum may be overkill. Additional research is needed on this topic and the NIOSH representative expressed interest in collaborating with HUD and EPA on this work.

The *Draft Technical Manual* currently recommends the use of a HEPA vacuum for all interior tasks that have the potential to generate lead-contaminated dust (see Chapter III). HEPA vacuums are also recommended to remove visible paint chips and dust after exterior tasks, excluding Level 1: Minimal Lead Dust-Generating Tasks (see Chapter IV).

### 6. When should dust testing be recommended and who should collect the samples?

Renovation, remodeling, and repainting tasks can create lead-contaminated dust levels that are equivalent to those produced during lead-based paint hazard control work where lead dust clearance testing is required or strongly recommended. EPA regulations require dust testing after lead abatement (40 CFR 745.227(e)(8)). The HUD *Guidelines* recommend and the HUD Lead

---

<sup>24</sup> U.S. EPA, March 1995, *Laboratory Evaluation of Dust and Dust Lead Recoveries for Samplers and Vacuum Cleaners*, pp. xviii, 88, EPA 747-R-94-004A.

<sup>25</sup> E. Tohn, October 1997, “A Preliminary Review of the Vermont Experience with Essential Maintenance Practices and Lead Disclosure;” Personal communication with Tim Connor, Connor Environmental Services and Engineering Assessments, March 1998; and *ARAMSCO Products Catalog 1998* (ARAMSCO, Thorofare, NJ).

## DRAFT DO NOT QUOTE OR CITE

Hazard Control Grant Program requires dust clearance testing after abatement or interim controls. The HUD *Guidelines* also encourage dust clearance testing when renovation activities have a strong likelihood of creating substantial lead dust.<sup>26</sup>

Such testing after renovation, remodeling and repainting can document whether the containment and cleaning procedures were sufficient to reduce dust lead to below acceptable levels (e.g., EPA and HUD recommended dust clearance levels), thereby providing a safe unit for re-occupancy. However, the potential constraints associated with dust testing are cost, availability of qualified personnel, and the added time of waiting for laboratory analysis results which can delay re-occupancy. Another issue is whether a renovation, remodeling or repainting contractor should be responsible for achieving clearance dust lead levels or just cleaning to the levels that existed prior to starting the work.

The costs of dust testing depend on the number of samples collected and the qualifications of individuals performing the work. Laboratory analysis costs range from \$5 to \$12 per dust sample, or higher.<sup>27</sup> Most EPA-recognized laboratories can analyze dust samples in 24 hours. Reports from certified lead inspectors and risk assessors indicate that the cost of providing full-scale dust clearance testing can range from \$100 to \$300 per dwelling unit depending upon the number of samples collected, the size of the unit, and the travel time involved.<sup>28</sup> Others estimate that dust clearance testing conducted by certified personnel will range from \$70 to \$100 per unit in multifamily dwellings.<sup>29</sup> Consumer dust testing kits will soon be available in hardware stores and home centers and can now be obtained via direct mail from one EPA-recognized laboratory. These kits retail for less than \$20 and include laboratory analysis of two dust samples (whether taken as composite or single surface samples) as well as the materials needed to collect the samples (e.g., gloves, tape measure, wipes, container, etc.). The kit also provides materials to mail the samples to the laboratory for analysis. Results can be received via mail or fax.<sup>30</sup>

EPA regulations for lead abatement require that dust testing during risk assessments and state or federally certified lead inspectors or risk assessors perform clearance. The HUD *Guidelines* recommend that only certified personnel conduct dust testing. Because certified individuals generally receive between three and five days of training, they are more likely to collect the sample correctly than a person who has not completed the training (e.g., a homeowner or renovation contractor). As noted above, the costs of using a certified individual will likely be higher than a non-certified individual.

---

<sup>26</sup> U.S. HUD, June 1995, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, pp. 11-6; 12-6; 4-7.

<sup>27</sup> METS Laboratory, March 1998; Personal communication with lead inspectors and risk assessors.

<sup>28</sup> Personal conversation with Pat Connor, Connor Environmental Services and Engineering Assessments and Jim Bland, METS Laboratories, March 1998.

<sup>29</sup> U.S. Department of Housing and Urban Development (HUD), *Lead-Based Paint Hazard Reduction and Financing Task Force, Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing*, July 1995 and Draft Regulatory Impact Analysis of proposed Title X Section 1018 rules.

<sup>30</sup> METS Laboratory, May 1998.

## DRAFT DO NOT QUOTE OR CITE

Another factor that needs to be considered concerns the current availability of certified lead inspectors and risk assessors to perform dust testing. In many states, there are still only a few of these individuals. The limited supply of certified inspectors and risk assessors could further drive up the cost of sampling and create other logistical problems (e.g., timeliness in getting an inspector into the field to obtain samples) for many renovation, remodeling and repainting projects.

The potential advantages of allowing a homeowner or contractor to collect samples are cost savings and ease of implementation since no additional person need be hired. The disadvantages include the potential conflict of interest a contractor may have (i.e., by tampering with a sample to ensure it passes dust clearance levels) and the potential for sampling error due to limited experience and/or lack of training in obtaining such samples. Some states may also have legislation or regulations that prevent non-certified individuals from collecting dust samples after renovation, remodeling or repainting activities.

An alternative to recommending dust testing is to prescribe specific cleaning protocols that are known to achieve clearance. This option would eliminate the costs of testing. However, it may be difficult to certify that a contractor properly completed the cleaning protocol. In addition, a visual examination can not always determine if harmful levels of lead dust remain after cleaning since small dust particles containing lead can be very difficult to observe.

Members of the Work Group were divided on each of these issues. Some thought that dust testing should not be required at all because it could make renovation, remodeling and repainting contractors responsible for meeting the same standards as lead hazard control contractors. If a HUD-style clearance testing protocol had to be followed, small contractors could be priced out of the market. Those who were opposed to dust testing felt that a visual examination standard after following lead dust minimization work practices was sufficient unless a contractor chose to “opt-out” of the work practices and obtain post-activity lead dust samples instead. Several members suggested that dust testing should only be triggered by a specific request from the customer (i.e., property owner or manager). Others felt that if dust testing was required, contractors should only have to meet pre-activity dust lead levels, thereby necessitating pre- and post-work sampling. But a number of members supported dust testing by independent, certified inspectors upon completion of more extensive renovation, remodeling and repainting activities when the potential for generating substantial or extreme levels of lead-contaminated dust is great. Lastly, members suggested that encouraging consumer dust testing could indirectly create a new expectation for contractor performance. If contractors know that consumers will take final dust tests, they will be more likely to control dust and/or take dust samples themselves. In other words, once consumers demand that a job not leave lead hazards in their homes and properties, then and only then will contractors take the appropriate precautions.

An additional issue associated with dust testing is that property owners or managers would be obligated, under the Title X Section 1018 lead hazard disclosure requirement, to provide this information to prospective buyers and/or tenants. While some Work Group members speculated that property owners or managers might object to testing if it created a legal obligation to

## DRAFT DO NOT QUOTE OR CITE

disclose the results, others felt that such disclosure is exactly what was intended by the Section 1018 rule (i.e., to provide important lead hazard information to potential buyers and/or renters of older properties).

Chapter III of the *Draft Technical Manual* currently requires that contractors obtain at least two lead dust samples (one from the floor of the work area or room and one from the floor just beyond the dust containment established for the work area or room) after completing renovation remodeling, or repainting activities that are likely to create substantial or extreme levels of lead dust (i.e., Levels 3 and 4). If any dust sample exceeds the EPA/HUD or state recommended dust clearance level for floors (whichever is more stringent), then the contractor would have to repeat the cleaning procedure in the work area or room or the area immediately outside the room where the work was performed, or both. Occupants are not permitted access or to re-occupy the work area or room until the results of the tests document that dust levels are at or below the EPA/HUD guidance or state levels. But the *Manual* does not currently require that a certified lead inspector or risk assessor must collect such dust samples.

### **7. Should contractors be permitted to “opt-out” of specified lead dust minimization work practice requirements by meeting a performance standard?**

Various members of the Work Group advanced the concept of contractors being able to “opt-out” of conducting specified lead dust minimization work practices if they met a performance standard, such as post-activity lead dust testing. But while others felt that such work practices are needed because many contractors will not know how to perform the work safely, they did not object to providing an opt-out alternative. Conversely, one member argued that if contractors are told what needs to be accomplished and what conditions are expected (and not how to do it), they will learn to meet the standard. Another member stated that performance standards are often ignored by contractors (e.g., OSHA Lead In Construction Standard).

A visual examination combined with dust tests could be a possible performance standard. The visual examination would confirm that no visible dust or debris is present. Dust testing could be conducted after the work is completed using either the EPA/HUD guidance or state dust clearance levels as the standard. Alternatively, both pre- and post-project sampling could be required (post-project results could not exceed pre-project baseline levels). Some members argued that cleaning to EPA/HUD guidance clearance levels would be inexpensive and provide contractors with liability protection. One Work Group member’s experience is that dust clearance can be achieved regularly for an average cleaning cost of \$230 to \$300 per unit at rental turnover. But another member felt strongly that post-activity dust test results should not be required to exceed pre-activity levels.

The *Draft Technical Manual* does not currently offer contractors the option of meeting a specified performance standard in lieu of following any of the interior or exterior lead dust minimization work practices found in Chapters III and IV.

**DRAFT DO NOT QUOTE OR CITE****8. When is soil testing appropriate? Who should collect the samples? How many samples are needed?**

Exterior renovation, remodeling, and repainting tasks can create lead-contaminated debris (e.g., paint chips) and lead-contaminated dust levels in soil that are equivalent to those produced during lead-based paint hazard control work. EPA regulations applicable to exterior lead abatement work call for a visual inspection (40 CFR 745.227 (e)(8)(v)(c)) and do not require soil lead testing.

Soil testing conducted after renovation, remodeling, and repainting can only document whether the work contaminated soil if both pre- and post-activity samples are collected. Since many residential buildings already have lead-contaminated soil (particularly along building driplines and foundations), simply collecting a post-renovation sample could inappropriately suggest that the work created lead contamination which, in fact, existed before the project or job began. EPA has heard that soil lead levels measured near driplines and foundations before lead hazard control work begins can often exceed 2,000 parts per million (ppm). The EPA Interim Guidance on Identification of Lead-Based Paint Hazards recommends that access to bare residential soil with lead levels between 2,000 and 5,000 ppm be restricted (e.g., fences, covering with mulch).<sup>31</sup> The HUD *Guidelines* also consider lead levels exceeding 2,000 ppm in bare residential soil to be a lead-based paint hazard and recommend action to restrict access to such soil.<sup>32</sup> (The EPA Interim Guidance recommends restricting access when soil lead levels are considerably lower [i.e., lead levels exceed 400 ppm] if the bare soil is accessible to children. Soil abatement is recommended whenever lead levels exceed 5,000 ppm.)

The potential constraints associated with soil testing are cost, availability of qualified personnel, and the added time of waiting for laboratory analysis results, which can delay re-occupancy. As with lead dust testing, soil samples could be collected by a certified lead inspector or risk assessor. Alternatively, a contractor or property owner could collect such samples. Issues related to the cost and reliability of such sampling are the same as those presented for dust lead testing (see Key Issue #6 above). Unique to soil testing is the concern that contractors could “salt” the pre-construction samples with lead so that the post-construction samples reflect no higher readings than existed before the work began.

An alternative to requiring soil testing would be to recommend a visual inspection for paint chips and debris. This approach would be consistent with the Federal requirements for lead-based paint abatement projects (40 CFR 745.227 (e)(8)(v)(c)).

Members of the Work Group uniformly supported post-activity visual examinations as opposed to any soil sampling. The exception could be when an owner specifically requests such tests.

---

<sup>31</sup> EPA, September 1995, *Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust and Lead-Contaminated Soil*. (60 FR 47248)

<sup>32</sup> U.S. HUD, June 1995, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, p.5-35.

**DRAFT DO NOT QUOTE OR CITE**

Because elevated soil lead levels are frequently found outside older homes, any required soil sampling could place renovation, remodeling and repainting contractors in the role of being lead hazard control contractors if required to meet a soil standard.

As is the case for dust testing, an additional issue associated with collecting soil samples is the obligation, under the Title X Section 1018 lead hazard disclosure requirement, of property owners and managers to provide this information to prospective buyers and/or tenants. Again, Work Group members speculated that such owners or managers might object to soil sampling if it created a legal obligation to disclose the results.

Chapter IV of the *Draft Technical Manual* currently recommends that contractors perform a visual examination of the work area and surrounding area to check for any remaining visible dust, debris and/or paint chips after completing exterior renovation, remodeling or repainting tasks.

**DRAFT DO NOT QUOTE OR CITE****REFERENCES**

- Adgate, J.L., et al. "Lead in House Dust: Relationships Between Exposure Metrics." *Environmental Research* 1995, 25:134-147.
- Amitai, Y., Brown, M.J., Graef, F.W., and Cosgrove, E. 1991. "Residential Deleading: Effects on the Blood Lead Levels of Lead-Poisoned Children." *Pediatrics*, 88(5):893-897.
- ARAMSCO Products Catalog 1998, ARAMSCO, Thorofare, NJ
- Bates, M., Wyatt R, et. Al., "Old paint removal and blood lead levels in children," *New Zealand Medical Journal* 1997; 110(1053):373-377.
- Bellinger, D., Leviton, A., et al. "Correlates of low-level lead exposure in urban children at 2 years of age," *Pediatrics* 1986; 77:826-33.
- Buchwald-Fellis, M. November 1997. "Presentation at the American Public Health Association Conference."
- California Department of Health Services, Occupational Lead Poisoning Prevention Program, March 1996. *Painting Contractors Guide to Lead Safety*.
- California Department of Health Services, Occupational Lead Poisoning Prevention Program, February 1998. *California Painters Project: Helping Small Business Work Safely With Lead*.
- Craftsman Power and Hand Tools Catalog 1998-1999*, Sears Roebuck & Co., Chicago, IL.
- Dixon, S., Tohn, E. February 1998. "How Much Cleaning is Enough?" (submitted for publication)
- Farfel, M.R. and Chisolm, J.J. Jr. 1990. "Health and Environmental Outcomes of Traditional and Modified Practices for Abatement of Residential Lead-Based Paint." *American Journal of Public Health*. 80(10):1240-1245.
- Jacobs, D. 1998. "Occupational Exposures to Lead-Based Paint in Structural Steel Demolition and Residential Renovation." *International Journal of Environment and Pollution*. 9(1):126-139. Interscience Enterprises, United Nations Educational, Scientific and Cultural Organization, Switzerland.
- Marino, P.E., Landrigan, P.J., et al. "A Case Report of Lead Paint Poisoning During Renovation of a Victorian Farmhouse," *American Journal of Public Health*, October 1990, 80(10):1183-1185.
- Maryland annotated code, 26.16.03E(2).

**DRAFT DO NOT QUOTE OR CITE**

Minnesota Department of Health, "Safely Working With Lead While Remodeling the Older Home: Testing the Home for Lead; Removing Carpet; Taking Down and Wall; Removing Paint From Exterior Surfaces; Removing and Covering Interior Paint; Replacing Doors, Windows and Trim; Working with Soil; Disposal of Lead-Contaminated Waste."

National Association of the Remodeling Industry, (undated). *HUD/NARI Lead Remodeler's Training Program*.

National Environmental Training Association, 1997. *Lead-Based Paint Maintenance Training Program: Work Smart, Work Wet and Work Clean to Work Lead Safe*.

National Institute of Building Sciences, May 1995. *Lead-Based Paint: Operations and Maintenance Work Practices Manual for Homes and Buildings*.

National Institute for Occupational Safety and Health (NIOSH), May 1993. "HETA – Ohio University, Athens, Ohio," HETA 92-095-2317.

NIOSH, July 1997. "Cincinnati, Ohio: People Working Cooperatively," HETA #93-0818-2646.

Parker, Dean. 1965. *Principles of Surface Coating Technology*, Interscience Publishers, New York, NY, p. 235.

Rabinowitz, M., Leviton, A., et. al., "Home refinishing, lead paint, and infant blood lead levels." *American Journal of Public Health* 1985, 75:40304.

Sussell, A. ed., January 1998. "Protecting Workers Exposed to Lead-Based Paint Hazards: A Report to Congress." (NIOSH Publication #98-112).

Sussell, A., March 1998. "Letter to Ms. Lynn Bibeault, Rhode Island Department of Health."

Sussell, A. February 1998. "Presentation at New England Lead Coordinating Committee."

Tohn, E., October 1997. "A Preliminary Review of the Vermont Experience with Essential Maintenance Practices and Lead Disclosure."

U.S. Department of Housing and Urban Development (HUD), 1991. *The HUD Lead-Based Paint Abatement Demonstration (Fair Housing Administration)*. (HC-5831)

U.S. HUD, June 1995. *Guidelines For The Evaluation and Control of Lead-Based Paint Hazards in Housing*.

U.S. HUD, July 1995. *Lead-Based Paint Hazard Reduction and Financing Task Force, Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing*.

U.S. HUD, July 1995. *Regulatory Impact Analysis of the Proposed Rule on Lead-Based Paint: Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally-Owned Residential Property and Housing Receiving Federal Assistance*.

U.S. HUD, June 1996. *HUD Issues Proposed Rule to Revise Its Lead-Based Paint Regulations for Federally Owned Residential Property and Housing Receiving Federal Assistance*.

**DRAFT DO NOT QUOTE OR CITE**

U.S. HUD, March 1998. *Evaluation of the HUD Lead-Based Paint Hazard Control Grant Program: Fifth Interim Report.*

U.S. Environmental Protection Agency (EPA), July 1994. "Guidance on Residential Lead-Based Paint, Lead Contaminated Dust, and Lead Contaminated Soil." (60 FR 47248)

U.S. EPA, 1995. *A Review of Studies Addressing Lead Abatement Effectiveness.* (EPA 747-R-95-006)

U.S. EPA, February 1995. *Comprehensive Abatement Performance Pilot Study: Volume 1: Results of Lead Data Analysis.* (EPA 747-R-93-007)

U.S. EPA, March 1995. *Laboratory Evaluation of Dust and Dust Lead Recoveries for Samplers and Vacuum Cleaners: Volume 1: Objectives, Methods and Results.* (EPA 747-R-94-004A)

U.S. EPA, May 1997. *Lead Exposures Associated With Renovation and Remodeling Activities: Summary; Volumes I-II; Worker Characterization and Blood-Lead Study.* (EPA 747-R-96-005 - 008)

U.S. EPA, September 1997. *Reducing Lead Hazards When Remodeling Your Home.* EPA 747-K-97-001.

29 CFR Part 1926, Lead Exposure in Construction

40 CFR Part 745, Requirements for Lead-Based Paint Activities

**DRAFT DO NOT QUOTE OR CITE****GLOSSARY<sup>33</sup>**

**Abatement:** A measure or set of measures designed to permanently eliminate lead-based paint hazards or lead-based paint. Abatement strategies include, but are not limited to, the removal of lead-based paint, permanent enclosure or encapsulation of lead-based paint, replacement of lead-painted surfaces or fixtures, and removal or covering of lead-contaminated soil. All of these strategies require preparation, clean-up, waste disposal, and post-abatement clearance testing.

**Bare soil:** Soil not covered with grass, sod, some other similar vegetation, or paving, including the sand in sandboxes.

**Building component:** Any element of a building that may be painted or have dust on its surface (e.g., walls, stair treads, floors, railings, doors, window sills, etc.).

**Certified:** The designation for contractors who have completed training and other requirements to allow them to safely undertake risk assessments, inspections or abatement work. Risk assessors, inspectors and abatement contractors should be certified by the appropriate state or EPA pursuant to § 745.226(f).

**Clearance examination:** Visual examination and collection of environmental samples by an inspector or risk assessor and analysis by an accredited laboratory upon completion of an abatement project, interim control intervention, or maintenance job that disturbs lead-based paint (or paint suspected of being lead-based). The clearance examination is performed to ensure that lead exposure levels do not exceed standards established by the EPA Administrator pursuant to Title IV of the Toxic Substances Control Act, and that any cleaning following such work adequately meets those standards.

**Composite sample:** A single sample made up of individual sub-samples. Analysis of composite samples produces the arithmetic mean of all sub-samples.

**Containment:** A process to protect workers and the environment by controlling exposures to the lead-contaminated dust and debris created during abatement.

**Deteriorated paint:** Paint that is cracking, flaking, peeling, chipping, or otherwise separating from the substrate of a building component.

**Elevated blood lead level (EBL) child:** A child who has a blood lead level greater than or equal to 10 µg/dl.

**Heat gun:** A device capable of heating lead-based paint causing it to separate from the substrate. For lead hazard control work, the heat stream leaving the gun should not exceed 1,100°F (some authorities may use a different temperature).

---

<sup>33</sup> Many of these definitions are excerpted from 40 CFR 745.223 and the US Department of Housing and Urban Development, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, 1995, pp. G-1 - G-14.

## DRAFT DO NOT QUOTE OR CITE

**High-Efficiency Particulate Air (HEPA) filter:** A filter capable of removing particles of 0.3 microns or larger from air at 99.97 percent or greater efficiency.

**Inspection (of paint):** A surface-by-surface investigation to determine the presence of lead-based paint and a report explaining the results of the investigation.

**Inspector:** An individual who has completed training from an accredited program as defined by 40 CFR Part 745 and certified by EPA pursuant to 40 CFR 745.226 to conduct inspections. A certified inspector also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

**Interim controls:** A set of measures designed to temporarily reduce human exposures to lead-based paint hazards including specialized cleaning, repairs, maintenance, painting, temporary containment, and ongoing monitoring of lead-based paint hazards or potential hazards, and the establishment and operation of management and resident education programs. Interim controls include, but are not limited to: dust removal; paint film stabilization; treatment of friction and impact surfaces, installation of soil coverings, such as grass or sod; and land-use controls.

**Interior window sill:** The portion of the horizontal window ledge that protrudes into the interior of the room, adjacent to the window sash when the window is closed (often called the window stool).

**Lead-based paint or lead paint:** Paint or other surface coating that contains lead equal to or greater than 1.0 mg/cm<sup>2</sup> or more than 0.5 percent by weight (5,000 µg/g, 5,000 ppm, or 5,000 mg/kg). (Local definitions may vary.)

**Lead-based paint hazard:** Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as identified by the Administrator pursuant to TSCA section 403.

**Lead-based paint hazard control:** Activities to control and eliminate lead-based paint hazards, including interim controls, abatement and complete abatement.

**Lead-contaminated dust or lead dust:** Surface dust in residential dwellings or child-occupied facilities that contain an area or mass concentration of dust in excess of the standard established by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. Until the EPA standards are set, the HUD- and EPA-recommended clearance and risk assessment standards for leaded dust are 100 µg/ft<sup>2</sup> on floors, 500 µg/ft<sup>2</sup> on interior window sills and 800 µg/ft<sup>2</sup> on window troughs.

**Lead-contaminated soil:** Bare soil on residential real property and on the property of a child-occupied facility that contains lead in excess of the standard published by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. The HUD-recommended standard and interim EPA guidance is 400 µg/g for high-contact play areas and 2,000 µg/g in other bare areas of the yard. EPA and HUD recommend that soil contaminated with lead at levels greater than or equal to 5,000 µg/g be abated by removal or paving.

## DRAFT DO NOT QUOTE OR CITE

**Lead-poisoned child:** A child with a single blood lead level that is greater than or equal to 20 µg/dl or consecutive blood lead levels greater than or equal to 15 µg/dl. Local definitions may vary.

**Mean:** The arithmetic average of a series of numerical data values. For example, the algebraic sum of the data values divided by the number of data values.

**Mil:** 1/1,000 of an inch (used to measure thickness).

**Multifamily housing:** Housing that contains more than one dwelling unit per location.

**Off-site paint removal:** The process of removing a component from a building and stripping the paint from the component at an off-site paint stripping facility.

**Protective sheeting:** Non-permeable, puncture resistant, disposable sheeting that is capable of completely containing lead-contaminated dust and debris or other waste and, after being properly sealed, should remain tight with no visible signs of discharge during movement or relocation.

**Renovation:** Work that involves construction and/or home or building improvement measures such as window replacement, weatherization, remodeling and repainting.

**Replacement:** Removal of building components (such as windows, doors and trim) and the installation of new components.

**Risk assessment:** (1) An onsite investigation to determine to existence, nature, severity, and location of lead-based paint hazards, and (2) the provision of a report by the individual or firm conducting the risk assessment.

**Risk assessor:** A certified individual who has completed training by an accredited training program as defined in 40 CFR Part 745 and certified by EPA pursuant to 40 CFR 745.226 to conduct risk assessments. A risk assessor also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

**Special bags:** Non-permeable, puncture resistant, heavy-duty disposable bags that are capable of completely containing lead-contaminated dust and debris or other waste and, after being properly sealed, should remain tight with no visible signs of discharge during movement or relocation.

**Sub-sample:** A representative portion of a sample. A sub-sample may be either a field sample or a laboratory sample. A sub-sample is often combined with other sub-samples to produce a composite sample.

**Substrate:** A surface on which paint, varnish, or other coating has been applied or may be applied. Examples of substrates include wood, plaster, metal and drywall.

**Trained:** Successful completion of a training course in a particular discipline. For lead hazard control work, the training course must be accredited by EPA or by an EPA-approved State program, pursuant to Title IV of the Toxic Substances Control Act.

**DRAFT DO NOT QUOTE OR CITE**

**Window trough:** For a typical double-hung window, the portion of the exterior window sill between the interior window sill (or stool) and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered (sometimes inaccurately called the window “well”).

**Work area:** The immediate area in which work occurs, typically the surrounding area and extending out at least four feet.

**µg:** Micrograms. The prefix micro means 1/1,000,000 (or one-millionth). A microgram is 1/1,000,000 of a gram and 1/1,000 of a milligram; equal to about 35/1,000,000,000 (35 billionths) of an ounce (an ounce is equal to 28,400,000 µg).

## Exhibit 1: Lead Dust Minimization Work Practices for Interior Renovation Tasks

*Protective sheeting* means non-permeable, puncture resistant disposable sheeting. *Special bags* means non-permeable, puncture resistant disposable bags.

Tasks Performed On Painted Surfaces	Occupant Protection	Dust Minimization and Containment	Final Clean-up and Waste Disposal
<p><b>Level 1: Minimal Lead-Dust Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• wet sanding small areas (less than 2 ft<sup>2</sup> per room)</li> <li>• drilling painted surfaces</li> <li>• removing paint by applying and removing chemical strippers</li> </ul>	<p style="text-align: center;"><b>Level 1</b></p> <ul style="list-style-type: none"> <li>⇒ focus on work area</li> <li>⇒ restrict access</li> <li>⇒ remove/cover belongings</li> <li>⇒ clean worker clothing with HEPA vacuum</li> </ul>	<p style="text-align: center;"><b>Level 1</b></p> <ul style="list-style-type: none"> <li>⇒ If using chemical stripper, place directly underneath work area to collect effluent</li> </ul>	<p style="text-align: center;"><b>Level 1</b></p> <ul style="list-style-type: none"> <li>⇒ HEPA vacuum &amp; wet wash work area</li> <li>⇒ dispose of protective sheeting in special bag or container</li> </ul>
<p><b>Level 2: Moderate Lead-Dust Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• removing carpet or non-painted flooring</li> <li>• hand-sawing</li> <li>• chiseling</li> <li>• prying with a crow or pry bar</li> <li>• wet sanding more than 2 ft<sup>2</sup> per room</li> <li>• removing whole building components with paint in good condition</li> <li>• dry machine sanding more than 2 ft<sup>2</sup> per room using a sander with HEPA vacuum attachment</li> <li>• using an electric planer with HEPA vacuum attachment</li> </ul>	<p style="text-align: center;"><b>Level 2 plus</b></p> <ul style="list-style-type: none"> <li>⇒ focus on work room</li> <li>⇒ block entrance to work room after work begins</li> <li>⇒ wear protective worker clothing and clean with HEPA vacuum before leaving work room</li> <li>⇒ collect 1 dust clearance sample from floor of work area or room</li> </ul>	<p style="text-align: center;"><b>Level 2 plus</b></p> <ul style="list-style-type: none"> <li>⇒ close &amp; cover HVAC vents with plastic sheeting</li> <li>⇒ cover floor with protective sheeting</li> <li>⇒ wrap removed components with deteriorated paint in protective sheeting</li> </ul>	<p style="text-align: center;"><b>Level 2 plus</b></p> <ul style="list-style-type: none"> <li>⇒ clean work room &amp; tools</li> <li>⇒ HEPA vacuum and/or dispose of protective clothing in special bag</li> </ul>
<p><b>Level 3: Substantial Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• dry hand sanding less than 2 ft<sup>2</sup> per room or around electrical outlets</li> <li>• dry hand scraping less than 2 ft<sup>2</sup> per room or around electrical outlets</li> <li>• using an electric planer</li> <li>• cutting using an electric circular or reciprocating saw</li> <li>• removing paint with a heat gun operating under 1,100°F</li> <li>• dry hand sanding or hand scraping remaining dry residue after removing paint with chemical strippers</li> <li>• removing window systems or components if paint is in very poor condition</li> <li>• demolishing painted surfaces using hand or power tools</li> </ul>	<p style="text-align: center;"><b>Level 3 plus</b></p> <ul style="list-style-type: none"> <li>⇒ focus on entire residence</li> <li>⇒ 2 dust clearance samples: 1<sup>st</sup> in work room, 2<sup>nd</sup> outside dust containment</li> </ul>	<p style="text-align: center;"><b>Level 3 plus</b></p> <ul style="list-style-type: none"> <li>⇒ clean all horizontal surfaces in work room with HEPA vacuum at conclusion of work day</li> </ul>	<p style="text-align: center;"><b>Level 3 plus</b></p> <ul style="list-style-type: none"> <li>⇒ clean protective sheeting &amp; protective worker clothing before disposal</li> </ul>
<p><b>Level 4: Extreme Lead Dust Generating Tasks</b></p> <p>No activities are currently considered Level 4 tasks.</p>			

## Exhibit 2: Lead-Dust Minimization Work Practices for Exterior Renovation Tasks

*Protective sheeting* means non-permeable, puncture resistant disposable sheeting. *Special bags* means non-permeable, puncture resistant disposable bags.

Tasks Performed On Painted Surfaces	Occupant protection	Dust minimization and containment	Final clean-up and waste disposal
<p><b>Level 1: Minimal Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• nailing</li> <li>• screwing</li> <li>• drilling</li> <li>• wet sanding small areas (less than 2 ft<sup>2</sup>)</li> <li>• removing paint by applying and removing chemical strippers</li> </ul>		<p>⇒ If using chemical stripper, place protective sheeting directly underneath to collect effluent</p>	<p>⇒ Dispose of protective sheeting in special bag or container</p>
<p><b>Level 2: Moderate Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• sawing</li> <li>• chiseling</li> <li>• prying with a crow or pry bar</li> <li>• dry sanding/scraping less than 2 ft<sup>2</sup></li> <li>• wet sanding/scraping more than 2 ft<sup>2</sup></li> <li>• removing painted components</li> <li>• removing paint with an orbital or belt sander equipped with a HEPA vacuum attachment</li> <li>• removing paint using abrasive blasting with a HEPA vacuum attachment</li> <li>• power-washing painted surfaces with low-pressure equipment</li> </ul>	<p>⇒ focus on work area</p> <p>⇒ restrict access to work area</p> <p>⇒ clean worker clothing when leaving work area</p> <p>⇒ perform visual examination for paint chips, dust and debris</p>	<p>⇒ protective sheeting in work area &amp; extend out 10 ft.</p> <p>⇒ mist work surfaces, if feasible</p> <p>⇒ barriers to contain run-off from power washing</p>	<p>⇒ wet mist protective sheeting &amp; roll up</p> <p>⇒ collect paint chips/debris</p> <p>⇒ dispose of debris in protective sheeting or special bags</p>
<p><b>Level 3: Substantial Lead Dust-Generating Tasks</b></p> <ul style="list-style-type: none"> <li>• electric planing</li> <li>• dry scraping more than 2 ft<sup>2</sup> &amp; less than 20 ft<sup>2</sup></li> <li>• dry sanding more than 2 ft<sup>2</sup> &amp; less than 20 ft<sup>2</sup></li> <li>• removing paint with a heat gun operating under 1,100°F</li> <li>• dry hand sanding or hand scraping remaining dry residue after removing paint with a chemical stripper</li> <li>• demolishing painted surfaces using either hand or power tools</li> </ul>	<p>LEVEL 2 plus</p> <p>⇒ focus on work area &amp; buffer zone</p> <p>⇒ remove/cover play equipment</p>	<p>⇒ LEVEL 2 plus</p> <p>⇒ cover ground with protective sheeting in work area &amp; extend out 20 ft.</p> <p>⇒ cover windows in buffer zone with protective sheeting</p> <p>⇒ turn off HVAC if compressor/condenser is in work area/buffer zone &amp; cover with protective sheeting</p>	<p>LEVEL 2</p>
<p><b>Level 4: Extreme Hazards</b></p> <ul style="list-style-type: none"> <li>• removing paint using high-pressure water or hydroblasting equipment</li> </ul>	<p>LEVEL 3 plus</p> <p>⇒ focus on residence &amp; larger buffer zone</p> <p>⇒ restrict resident access during day</p> <p>⇒ restrict access with temporary fencing/barrier</p>	<p>LEVEL 3 plus</p> <p>⇒ protective sheeting in work area &amp; extend out 20 ft</p> <p>⇒ cover windows in larger buffer zone with protective sheeting</p> <p>⇒ control water run-off and debris from hydroblasting</p>	<p>LEVEL 3 plus</p> <p>⇒ in multi-day jobs, full cleaning procedures daily</p> <p>⇒ remove paint chips/debris with HEPA vacuum</p>



## Options and Approaches for Renovation and Remodeling Regulations

This list paper identifies the eight major components of a regulation addressing renovation and remodeling contractors. These components are based upon the framework established by the existing lead based paint activities regulations codified at 40 CFR 745 subpart L which will be revised to include R&R:

1. applicability
2. firm certification
3. individual training and certification
4. accreditation
5. work practice standards
6. prohibited practices
7. exterior clearance
8. interior clearance

For each regulatory component, the paper identifies several options. These options can be mixed and matched to create rulemaking approaches or scenarios. For example, an approach based upon the Abatement or Full Regulatory Approach is reflected by the option 1 selection for each component. The Limited Regulatory Approach is created by selecting each option that is presented in **bold faced type**. The estimated costs of the Abatement or Full Regulatory Approach and the Limited Regulatory Approach are identified in the paper entitled *"Estimated Costs of Renovation and Remodeling Rule Approaches."*

### Applicability

A renovation and remodeling rule would apply to individuals and firms engaged in renovation and remodeling activities in all or certain housing built before 1978, the year lead-based paint was banned. Possible options include:

- Option 1:** All pre-1978 housing  
 Option 2: All pre-1978, rental housing only  
 Option 3: All pre-1950 housing  
 Option 4: All pre-1950, rental housing only

Under all of these options, the regulated parties would include residential rental property owners and managers, general contractors, and special trade contractors such as painters, plumbers, carpenters, and electricians. In addition, a variety of activities could be exempt from the rules, such as jobs disturbing a small area of lead-based paint, work on housing that is determined to be free of lead-based paint, work performed by the homeowner, or work on housing for the elderly or disabled, unless a child resides there, or on zero bedrooms dwellings. These exemptions are described in greater detail in *"Questions and Answers for Renovation and Remodeling Options."*

### Certification of Firms

In order to conduct regulated renovation and remodeling activities, EPA could require a firm to be certified by EPA or an authorized state. More information regarding firm certification can be found in "*Questions and Answers for Renovation and Remodeling Options*". These certification requirements could apply to:

- Option 1:** All renovation and remodeling firms
- Option 2: Only firms involved in large-scale surface preparation or demolition
- Option 3: No firms

## Training and Certification of Individuals

EPA could require individuals engaged in regulated renovation and remodeling activities to complete an accredited training course and be certified by EPA or an authorized state. More information regarding individual certification can be found in "*Questions and Answers for Renovation and Remodeling Options*". Possible options include:

- Option 1: Training and certification of all individuals performing regulated renovation and remodeling activities
- Option 2: Training and certification of supervisors only; worker training would be optional
- Option 3: Training required for all individuals performing regulated renovation and remodeling activities; no certification for workers**
- Option 4: No training and certification requirements

## Accreditation of Training Providers

EPA could require entities that train renovation and remodeling workers to obtain accreditation from EPA or an authorized state. More information regarding training provider accreditation can be found in "*Questions and Answers for Renovation and Remodeling Options*". The basic options are:

- Option 1: Require all training providers to be accredited**
- Option 2: Do not require training provider accreditation; instead, using the OSHA training approach, require firms to document the training of their employees in key areas specified by the Agency

## Work Practice Standards

The current regulations for lead-based paint activities contain prescriptive work practice standards that take into account reliability, effectiveness, and safety. EPA could establish prescriptive work practice standards for renovation and remodeling activities. Alternatively, EPA could establish performance-based standards, allowing renovation and remodeling contractors the flexibility to determine how to meet the performance standards. More information regarding work practice standards can be found in "*Questions and Answers for Renovation and*

*Remodeling Options*” The main options are:

- Option 1: Prescriptive containment and cleanup requirements
- Option 2: Performance-based containment and cleanup requirements (example, interior and exterior fugitive dust restrictions)**
- Option 3: None

## Prohibited Practices

Under the current regulations for lead-based paint abatement activities, certain practices are prohibited because of the risks they create. These practices are open flame burning or torching of lead-based paint; machine sanding, grinding, abrasive blasting, or sandblasting of lead-based paint *except* when done with HEPA exhaust control; dry scraping of lead based paint *except* around electrical outlets or for any area no more than 2 square feet in any one room, hallway, or stairwell, or for any area no more than 20 square feet on exterior surfaces; and operating a heat gun at 1100 degrees Fahrenheit or higher. For the renovation and remodeling rule, EPA could:

- Option 1: Continue with lead abatement work practice prohibitions described above
- Option 2: Modify the abatement work practices prohibitions to:
  - a) Allow exterior open flame burning or torching of lead-based paint and
  - b) Eliminate restrictions on the use of dry scraping
- Option 3: Modify abatement work practice prohibitions as in option 2 and also allow interior flame burning with some restrictions – see interior clearance, option 2**
- Option 4: Have no restricted practices

## Exterior Clearance

EPA could require an exterior clearance following exterior renovation and remodeling. This clearance could include a visual inspection for deteriorated lead-based paint, visual inspection to determine if visible amounts of dust and debris remain, and soil testing for lead contamination. More information regarding exterior clearance requirements can be found in *“Questions and Answers for Renovation and Remodeling Options”* The options include:

- Option 1: Visual clearance following all exterior renovation and remodeling**
- Option 2: Soil sampling following all exterior renovation and remodeling
- Option 3: No clearance following exterior renovation and remodeling

## Interior Clearance

EPA also could require an interior clearance following interior renovation and remodeling. Interior clearance would include a visual inspection of the work area to verify if deteriorated painted surfaces or visible amounts of dust, debris, or residue remain after renovation and remodeling activity, and clearance sampling for lead-contaminated dust. More

information regarding interior clearance requirements can be found in “*Questions and Answers for Renovation and Remodeling Options*”. The options include:

- Option 1: Dust testing following all interior renovation and remodeling
- Option 2: Dust testing following specific jobs involving large-scale surface preparation or demolition and any practice prohibited by the abatement rules – see prohibited practices, Scenario 1, plus visual clearance for all other interior jobs**
- Option 3: Visual clearance following all interior renovation and remodeling
- Option 4: No clearance following interior renovation and remodeling

EPA xxx-x-xx-xxx  
August 1999

**LEAD EXPOSURE ASSOCIATED WITH  
RENOVATION AND REMODELING ACTIVITIES**

**FINAL SUMMARY REPORT**

Prepared by

**BATTELLE  
505 King Avenue  
Columbus, Ohio 43201-2693**

for

**Technical Branch  
National Program Chemicals Division  
Office of Pollution Prevention and Toxics  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
Washington, D.C. 20460**

### U.S. EPA DISCLAIMER

This report was prepared under contract to an agency of the United States Government. Neither the United States Government nor any of its employees, contractors, subcontractors, or their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party use of or the results of such use of any information, apparatus, product, or process disclosed in this report, or represents that its use by such third party would not infringe on privately owned rights.

Publication of the data in this document does not signify that the contents necessarily reflect the joint or separate views and policies of each sponsoring agency. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

### BATTELLE DISCLAIMER

This is a report of research performed for the United States Government by Battelle. Because of the uncertainties inherent in experimental or research work, Battelle assumes no responsibility or liability for any consequences of use, misuse, inability to use, or reliance upon the information contained herein, beyond any express obligations embodied in the governing written agreement between Battelle and the United States Government.

## TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION .....	1
2.0 PHASE I: ENVIRONMENTAL FIELD SAMPLING STUDY .....	2
2.1 <u>PHASE I: DESIGN</u> .....	2
2.2 <u>PHASE I: RESULTS</u> .....	3
3.0 PHASE II: WORKER CHARACTERIZATION AND BLOOD-LEAD STUDY .....	4
3.1 <u>PHASE II: DESIGN</u> .....	4
3.2 <u>PHASE II: RESULTS</u> .....	4
4.0 PHASE III: WISCONSIN CHILDHOOD BLOOD-LEAD STUDY .....	5
4.1 <u>PHASE III: DESIGN</u> .....	5
4.2 <u>PHASE III: RESULTS</u> .....	5
5.0 PHASE IV: WORKER CHARACTERIZATION AND BLOOD-LEAD STUDY OF WORKERS AND HOMEOWNERS PERFORMING R&R IN HISTORIC HOMES .....	6
5.1 <u>PHASE IV: DESIGN</u> .....	6
5.2 <u>PHASE IV: RESULTS</u> .....	7
6.0 CONCLUSIONS .....	8
7.0 REFERENCES .....	8

### List of Tables

Table 1.	Summary Measures of Worker Exposure to Airborne Lead (Phase I) .....	10
Table 2.	Summary Measures of Potential Occupant Lead Exposures that Can Result from Conducting Target and Generic R&R Activities (Phase I) .....	11
Table 3.	Information for an Assessment of Worker Exposures Associated with Different R&R Worker Groups (Phases II and IV) .....	13
Table 4.	Predicted Changes in General Worker Blood-Lead Concentrations Associated with 10 Days of Work in Pre-1950 Buildings (Phase II) .....	14
Table 5.	Unconditional Odds Ratios from Logistic Regression with Single R&R Variables (Phase III) .....	15
Table 6.	Predicted Changes in High-Risk Worker Blood-Lead Concentrations ( $\mu\text{g}/\text{dL}$ ) Associated with 10 Days of Work in Pre-1940 Homes (Phase IV) .....	17
Table 7.	Predicted Changes in Homeowner Blood-Lead Concentrations ( $\mu\text{g}/\text{dL}$ ) Associated With Changes in the Number of Hours Spent Performing a Target Activity in Their Pre-1940 Home (Phase IV) .....	17

### List of Figures

Figure 1.	Hours of Activity That Would Result in an Estimated Geometric Mean 8-Hour TWA of $50 \mu\text{g}/\text{m}^3$ (Phase I) .....	11
Figure 2.	Estimated Distribution of Dust Lead in a 6' x 1' Region Extending from the Activity Area for Various Activities (Phase I) .....	12

**TABLE OF CONTENTS (Continued)**

Figure 3. Histogram of Blood-Lead Concentration (Semi-Logarithmic Scale) for Workers in the WCBS (Phase II) . . . . . 12

Figure 4. Histogram of Homeowner Blood-Lead Concentration (Semi-Logarithmic Scale) (Phase IV) . . . . . 16

Figure 5. Histogram of Blood-Lead Concentration (Semi-Logarithmic Scale) for Workers Specializing in R&R of Historic/Old Homes (Phase IV) . . . . . 16

## 1.0 INTRODUCTION

The phased elimination of lead additives from motor fuels during the 1970s and 1980s and restrictions on the use of lead in paint and solder have resulted in large declines in blood-lead levels over the past decade. Childhood lead poisoning, however, continues to be a serious environmental health problem in the United States. Chief among the remaining sources of public lead exposures is lead-based paint on the interior surfaces of older buildings, including dwellings, public buildings, and commercial structures.

In 1978, maximum allowable content limits were placed on the use of lead in paint used for toys, residences, and most furniture by the Consumer Product Safety Commission (CPSC). Nevertheless, substantial quantities of lead-based paint, some of it covered with more than one layer of newer paint or other wall covering, remain in the older building stock, particularly dwellings and public buildings constructed before 1950. Lead-based paint that is chipping, peeling, or otherwise deteriorating is widely recognized as a source of lead exposure for toddlers and young children in older neighborhoods. Increasingly, environmental and public health researchers have become concerned that disturbing intact lead-based paint or otherwise mobilizing lead dust behind woodwork, window frames, in walls, etc., during renovation and remodeling (R&R) of older buildings can expose construction workers and building occupants to high lead levels.

To address this concern, Congress directed the U.S. Environmental Protection Agency (EPA) as part of the 1992 Residential Lead-Based Paint Hazard Reduction Act (Title X of HR 5334) to conduct a study of lead exposure associated with R&R. Specifically, Title IV of the Toxic Substances Control Act, Section 402 (c), paragraph (2), states:

*"The Administrator shall conduct a study of the extent to which persons engaged in various types of renovation and remodeling activities in target housing<sup>1</sup>, public buildings constructed before 1978, and commercial buildings are exposed to lead in the conduct of such activities or disturb lead and create a lead-based paint hazard on a regular or occasional basis."*

Accordingly, EPA undertook research to examine lead exposures for different categories of:

- *Persons*— R&R workers, occupants of buildings where lead-based paint is present and R&R activities are carried out, particularly children and other potentially exposed persons (i.e., persons who renovate or remodel their own old or historic houses ["do-it-yourselfers"]).
- *Activities*— R&R activities deemed to entail potential lead exposure (e.g., paint removal, surface preparation, interior demolition). Eleven such *target activities* were identified through consultation with other government agencies, lead poisoning prevention experts, industry representatives, labor unions, and other concerned groups.

---

<sup>1</sup> "target housing" is defined by the Act as housing constructed before 1978.

The study had two objectives:

1. Determine the extent to which persons engaged in various types of R&R activities are exposed to lead.
2. Determine the extent to which persons engaged in various types of R&R activities disturb lead and create a lead-based paint hazard, on a regular or occasional basis, to building occupants or other exposed individuals.

An optimal study design would involve measuring worker and occupant blood-lead concentrations and environmental-lead levels before, during, and after R&R activities. Unfortunately, this design was not feasible due to substantial ethical and legal reasons. Therefore, the study was conducted in a series of four independent data collection efforts (phases) undertaken from 1993 to 1998.

The first two data collection efforts were conducted to characterize the environmental lead disturbance resulting from R&R activities (Phase I) and to focus on the effect of R&R activity on worker blood-lead concentrations through a retrospective study (Phase II). After the completion of these data collection efforts, additional studies (Phase III and Phase IV) were completed to address two remaining, significant data gaps. Phase III was designed to move beyond Phase I to assess the relationship between the incidence of R&R activity and elevated blood-lead concentrations in children. Phase IV was designed to assess whether there exists a subset of R&R workers or homeowners, performing R&R work in high-risk homes, that have an increased risk of elevated blood-lead concentrations.

Although some design aspects were employed in multiple phases, each of these four phases was a distinct data collection effort and all phases were conducted in different locations, at different times, and with different sample populations. The next four chapters present the specific study design and results for each phase of the R&R Study.

## 2.0 PHASE I: ENVIRONMENTAL FIELD SAMPLING STUDY

### 2.1 PHASE I: DESIGN

The first data collection effort of the R&R Study was the Environmental Field Sampling Study (EFSS), which assessed the relative distribution of exposure to lead created by selected R&R activities. The EFSS focused on monitoring six specific R&R *activities* rather than specific *worker groups*. The activities included: removal of large structures (demolition), window replacement, carpet removal, heating, ventilating, and air conditioning (HVAC) repair or replacement, surface preparation, and repairs with small surface disruption. Exposures from exterior siding, wallpaper removal, and exterior soil disruption were also not evaluated because they were considered of secondary importance by the study design team and the individuals consulted in the information-gathering phase.

For each monitored R&R activity, buildings containing lead-based paint suitable for typical application of the activity were selected. Environmental measurements of lead were

taken before, during, and after conducting the target activity. The measurements taken in the EFSS included:

- **Personal Air Samples.** Measures of airborne lead concentrations at a fixed flow rate within each worker's personal breathing zone were collected by taking air samples through a cassette filter mounted to the worker's lapel. These samples were used to provide a measure of the potential inhalation exposure for workers.
- **Room (Ambient) Air Samples.** Ambient air samples were collected for selected activities in areas adjacent to the activity. Adjacent areas were used to address the levels at which occupants might be exposed to airborne lead in other parts of the building while the activity was being conducted.
- **Settled Dust Samples.** Settled dust samples were taken either from stainless steel dustfall collectors or from selected areas such as floors, window sills, window wells, and carpets. Samples were collected at varying distances from the surfaces disturbed by the activity. Lead loadings from settled dust samples were measured as indicators of the amount of lead disturbed by the activity and available as a potential exposure to occupants.

The EFSS was supplemented by an extensive search for other sources of data that could be used either to fulfill data requirements for a specific activity or to confirm results obtained in the Environmental Study.

## 2.2 PHASE I: RESULTS

Airborne lead levels in a worker's breathing zone, representing an average exposure over the duration that R&R activity was performed, were often very high during many R&R activities (see Table 1). These levels averaged greater than  $100 \mu\text{g}/\text{m}^3$  (micrograms of lead per cubic meter of air) for paint removal, interior demolition, and sawing activities, and greater than  $49 \mu\text{g}/\text{m}^3$  for interior surface preparation and disturbance of the central heating system ductwork. Average levels were considerably lower ( $< 20 \mu\text{g}/\text{m}^3$ ) for drilling, carpet removal, window replacement, and exterior surface preparation. These personal exposure measurements reflect only the period of conducting the specific R&R activity and do not represent average exposures over an 8-hour day for a worker. In addition, results were based on selected case studies and small sample sizes. Nevertheless, a number of personal exposure measurements in the R&R Study were high enough to imply that conducting the activity for even a short period of time, with no exposure during the rest of the work day, would result in an 8-hour time-weighted-average (TWA) above the OSHA personal exposure limit (PEL). For each activity, Figure 1 presents the minimum duration of activity that, on average, would be necessary to achieve an 8-hour TWA of  $50 \mu\text{g}/\text{m}^3$ , based on the limited personal exposure data collected in this study.

Occupant exposure to lead in buildings was assessed by analyzing samples of dust deposited as a result of R&R activities. With the exception of carpet removal and drilling into plaster, all monitored activities deposited considerable amounts of lead, well over the current EPA guidance of  $100 \mu\text{g}/\text{ft}^2$  for floors (see Table 2, Figure 2). Paint removal, demolition, sawing, and disturbing central heating system ductwork were more likely to cause airborne lead

to scatter and settle over a widespread area, while window replacement and drilling confined the disturbed lead to a smaller area. Simple broom and shop-vacuum cleanup resulted in substantial reduction in the total amount of lead available to occupants. However, as the distance from the activity increased, the cleanup left more lead in the remaining dust. In addition, the average amount of lead remaining after cleanup often stayed above EPA's current guidance on bare floor dust levels (100  $\mu\text{g}/\text{ft}^2$ ).

### 3.0 PHASE II: WORKER CHARACTERIZATION AND BLOOD-LEAD STUDY

#### 3.1 PHASE II: DESIGN

The second data collection effort of the R&R Study was the Worker Characterization and Blood-Lead Study (WCBS). The WCBS involved collecting questionnaire information and blood-lead measurements from 585 R&R workers in two cities to (1) characterize blood-lead concentrations in specific worker groups, (2) determine if specific worker groups or specific R&R activities are associated with increases in blood-lead concentrations, and (3) collect information to be used to develop worker profiles. The WCBS was intended to obtain information independent from the Environmental Field Sampling Study that would provide a direct measure of health effects on worker exposure to lead and to validate the results of the Environmental Field Sampling Study. Target R&R activities examined in the WCBS included removal of large structures (demolition), window replacement, carpet removal, HVAC repair or replacement, and paint removal/surface preparation. Post-activity cleanup was also assessed.

#### 3.2 PHASE II: RESULTS

The questionnaire employed in Phase II captured data on how often each worker conducted specific target activities in any home, including pre-1950 homes, during the past 30 days. The questionnaire results indicated that the sampled workers spent an average of 17 days during the previous month on general renovation and remodeling. The workers spent an average of 11 of these 17 days in pre-1950 homes. The questionnaire results also indicated that:

1. The R&R workers performed a wide variety of R&R activities, and spent considerable time removing large structures, removing paint, and preparing surfaces, activities with potential for creating high dust-lead exposure.
2. Ninety percent of the workers did not use a respirator.
3. Eighty-eight percent of the workers who performed cleanup activities did not use cleanup methods recommended for use in a lead-contaminated environment, and 99 percent used dry sweeping.
4. Of workers who performed paint removal, 97 percent used dry methods.
5. Sixty-seven percent of the workers had not received any materials on lead hazards, and 87 percent had received no lead exposure training.

Blood samples were collected from 581 of the 585 workers. Worker blood-lead concentrations were generally low: 9.1 percent were above 10  $\mu\text{g/dL}$ , 1.2 percent were above 25  $\mu\text{g/dL}$ , and only one worker had a blood-lead concentration greater than 40  $\mu\text{g/dL}$ . The geometric mean blood-lead concentration for all workers was 4.5  $\mu\text{g/dL}$  (see Figure 3). However, there were significant differences among the worker groups that differentiate the groups with the high mean blood-lead concentrations from those with the low mean blood-lead concentrations. Drywall workers (6.1  $\mu\text{g/dL}$ ), painters (5.9  $\mu\text{g/dL}$ ), and window installers (5.8  $\mu\text{g/dL}$ ) had the highest blood-lead concentrations, and floor layers (2.8  $\mu\text{g/dL}$ ) had the lowest (see Table 3).

The results of statistical models developed and fit to the data indicated that, with the exception of carpet removal, there was a statistically significant positive relationship between worker blood-lead concentration and short-term conduct (days in the last 30 days) in pre-1950 houses for each target activity. The relationships between worker blood-lead concentration and mid-term (weeks in the last year) and long-term exposure (years in career) associated with target activities were also generally positive. After adjusting for other variables potentially related to lead exposure — such as education level, smoking status, or age of worker's home — the data suggested that activities such as general R&R, cleanup, and paint removal would result in significant increases in worker blood-lead concentrations. However, in either the adjusted or unadjusted models the estimated increases, while statistically significant, were generally so small as to be of little practical consequence (see Table 4).

## 4.0 PHASE III: WISCONSIN CHILDHOOD BLOOD-LEAD STUDY

### 4.1 PHASE III: DESIGN

The third data collection effort of the R&R Study was the Wisconsin Childhood Blood-Lead Study (Wisconsin R&R). The Wisconsin R&R Study was designed as a retrospective case-control study to examine the association between incidence of R&R activities and elevated childhood blood-lead levels (EBLs). The Wisconsin Bureau of Public Health's Blood-Lead Registry was used to identify children with elevated blood-lead concentrations (cases) and children that did not have elevated blood-lead concentrations (controls). Children, both cases and controls, were selected from the registry, and questionnaire information was obtained from a guardian of each selected child. The questionnaire obtained information on: the child's residence, duration of residence, R&R activities in the past 12 months, blood sampling, household information, adult occupations and hobbies, and household income. Target R&R activities examined in the study included interior and exterior painting, paint removal and surface preparation, window repair, carpet removal, and wall repair.

### 4.2 PHASE III: RESULTS

Analyses of the questionnaire and blood information collected indicated that general residential R&R is associated with an increased risk of elevated blood-lead levels in children. Specifically, children living in a residence where R&R was conducted in the last 12 months were 1.3 times more likely to have elevated blood-lead levels than children who did not live in a residence where R&R was conducted.

Specific R&R activities were also found to be associated with an increase in the risk of elevated blood-lead concentrations among child occupants. In particular, removing paint (using open flame torches, heat guns, chemical paint removers, and/or wet scraping/sanding) and preparing surfaces by sanding or scraping significantly increased the risk of an elevated blood-lead level (see Table 5). For example, when paint removal using a heat gun was performed at a residence, the odds of an elevated blood-lead concentration were highly significant (4.6 times greater) than if the work was not performed. (The odds were over 4 times greater when compared to the case when some other type of surface preparation was carried out and to the case when the effects of other R&R factors were taken into account).

Several other factors were also found to increase the risk of an elevated blood-lead level in children. These factors included: increasing the number of rooms in which surface preparation was carried out for inside painting, having a relative or friend not in the household perform the R&R, living in the home while R&R was being conducted, and performing R&R in the kitchen (see Table 5).

The questionnaire responses were also used to characterize the exposure of residents to R&R activities. At least one R&R activity such as inside painting, outside painting, carpet and floor repair or replacement, or other repairs (e.g., window repair) were conducted in 67.2 percent of the study residences in the previous 12 months. Some form of surface preparation was involved in 42.3 percent of R&R activities. Most surface preparation involved hand scraping or sanding. Heat guns were used for surface preparation 7 percent of the time, and chemical paint removers were used 13.6 percent of the time.

## **5.0 PHASE IV: WORKER CHARACTERIZATION AND BLOOD-LEAD STUDY OF WORKERS AND HOMEOWNERS PERFORMING R&R IN HISTORIC HOMES**

### **5.1 PHASE IV: DESIGN**

The final data collection effort of the R&R Study was the Worker Characterization and Blood-Lead Study of Workers and Homeowners Performing R&R in Historic Homes (WCBS-HH). This study was designed as a follow-on study to Phase II of the R&R Study (the WCBS). Like the WCBS, it involved collecting questionnaire and blood-lead measurements from professional R&R workers to (1) characterize blood-lead concentrations in specific worker groups, (2) determine if specific worker groups or specific R&R activities are associated with increases in blood-lead concentrations, and (3) collect information to be used to develop worker profiles. However, the WCBS-HH also collected similar information from homeowners performing R&R themselves. Another difference from the Phase II study was that in either case (homeowners or workers), information was obtained from populations believed to be at a high-risk for lead-exposure because they routinely disturb lead-based paint; the data collection was targeted to workers and homeowners performing R&R in older homes that are likely to contain lead-based paint. Target R&R activities examined in the WCBS-HH included removal of large structures (demolition), window replacement, carpet removal, paint removal/surface preparation, and post-activity cleanup.

## 5.2 PHASE IV: RESULTS

In all, questionnaires were collected from 246 participants (163 workers and 83 homeowners). The Phase IV questionnaire collected information on how often each participant performed general R&R as well as specific target activities in historic homes. Workers in Phase IV spent, on average, 21 days performing general R&R in historic homes during the last 30 days. Homeowners spent, on average, 14 days performing general R&R in their own historic or pre-1940 home. The responses to the questionnaires also indicate that:

1. Workers spent more time performing R&R than did homeowners.
2. Both workers and homeowners spent time performing a variety of R&R activities. In particular, a large amount of time was spent performing large structure removal and paint removal/surface preparation.
3. Sixty-three percent of workers and 43 percent of homeowners had used, at some time in their career, a dust mask or respirator. However, on average, respirators were used among homeowners or workers for only about half of the time spent performing R&R during the last 30 days.
4. The majority of workers had not been trained (76%) nor received educational information (67%) on lead exposure due to R&R work. Similarly, 62 percent of homeowners had not received information on lead.
5. Over 75 percent of workers and homeowners who performed surface preparation reported using dry sanding/scraping to remove paint. About one-third of homeowners and workers reported using chemical stripping or burning/torching/heat gun methods to remove paint.

Blood samples were collected from 161 workers and 82 homeowners. Overall, the geometric mean blood-lead concentrations were well below 10  $\mu\text{g}/\text{dL}$ : 5.7  $\mu\text{g}/\text{dL}$  for workers and 4.5  $\mu\text{g}/\text{dL}$  for homeowners. Approximately 20 percent of the study participants had blood-lead concentrations above 10  $\mu\text{g}/\text{dL}$ . Also, 2.9 percent had blood-lead concentrations above 25  $\mu\text{g}/\text{dL}$ , and three study participants had blood-lead levels above 40  $\mu\text{g}/\text{dL}$  (see Figures 4 and 5). The adjusted geometric mean blood-lead concentrations among the worker groups ranged from 4.2  $\mu\text{g}/\text{dL}$  for Laborers to 6.3  $\mu\text{g}/\text{dL}$  for Painters but were not found to be significantly different (see Table 3). However, the adjusted geometric mean blood-lead concentrations for workers were significantly greater than those for homeowners. Further, the geometric mean blood-lead concentrations among high-risk workers (Phase IV) were significantly higher than the geometric mean blood-lead concentrations of general workers (Phase II) (see Table 3).

The results of statistical models developed and fit to the data indicated that there was a significant relationship between the conduct of certain R&R activities and blood-lead concentrations. Specifically, based upon covariate adjusted models, the number of days a worker spent performing general R&R, paint removal/surface preparation, and cleanup were significantly related to increases in worker blood-lead concentrations (see Table 6). Similarly,

the number of hours that homeowners spent performing general R&R and paint removal/surface preparation was found to be significantly related to increases in blood-lead concentrations (see Table 7). However, as in Phase II, the estimated increases for workers or homeowners were small.

## 6.0 CONCLUSIONS

The results of this study indicate that R&R workers may be exposed to high levels of environmental lead while conducting certain activities in certain environments. However, there was little evidence of elevated blood-lead concentrations<sup>2</sup> in a population of general R&R workers who conduct a wide variety of activities. Phase II of the R&R Study included workers in cities with documented lead problems who were conducting a significant amount of work in older buildings. In this regard, the results were weighted toward highly exposed general R&R workers. However, only one out of 581 participating workers had a blood-lead concentration greater than 40 µg/dL. Only seven out of 581 participating workers had a blood-lead concentration greater than 25 µg/dL. There was evidence (Phase IV) that R&R workers who may be even more highly exposed (i.e., workers specializing in historic renovations) had higher blood-lead concentrations than workers surveyed in Phase II. However, Phase IV found that even among these high-risk workers, only three out of 161 had blood-lead concentrations above 40 µg/dL. Further, out of 82 homeowners who performed R&R while residing in their own historic/pre-1940 home, none had blood-lead levels above 40 µg/dL and only four had blood-lead concentrations above 25 µg/dL.

Because low blood-lead concentrations were observed among R&R workers, long-term occupant exposure should be stressed when determining the need for worker training, certification, or educational materials. In this study, occupant exposure was characterized by measuring lead levels in environmental dust and through a retrospective survey. Results from Phase I of the study indicate that there is a potential for disturbing significant amounts of lead during R&R activities which could result in occupant exposure if appropriate cleanup and contamination practices are not conducted. The results of Phase III indicate that children residing in homes where R&R activities were conducted are more likely to have elevated blood-lead concentrations<sup>3</sup> than children residing in homes where R&R was not conducted.

## 7.0 REFERENCES

U.S. Environmental Protection Agency (1997a) "Lead Exposure Associated With Renovation and Remodeling Activities: Summary Report." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, EPA 747-R-96-005, May 1997.

---

<sup>2</sup> Elevated blood-lead concentrations among workers are defined for this study as concentrations above 40 µg/dL, the current Occupational Safety and Health Administration (OSHA) level at which full medical surveillance of a worker is required.

<sup>3</sup> Elevated blood-lead concentrations among children are defined as concentrations equal to or greater than 10 µg/dL.

U.S. Environmental Protection Agency (1997b) "Lead Exposure Associated with Renovation and Remodeling Activities: Environmental Field Sampling Study." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, EPA 747-R-96-007, May 1997.

U.S. Environmental Protection Agency (1997c) "Lead Exposure Associated with Renovation and Remodeling Activities: Worker Characterization and Blood-Lead Study." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, EPA 747-R-96-006, May 1997.

U.S. Environmental Protection Agency (1998a) "Lead Exposure Associated with Renovation and Remodeling Activities: Phase III, Wisconsin Childhood Blood-Lead Study" Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, EPA 747-R-99-002, March 1999.

U.S. Environmental Protection Agency (1998b) "Lead Exposure Associated with Renovation and Remodeling Activities: Phase IV, Worker Characterization and Blood-Lead Study of R&R Workers Who Specialize in Renovation of Old or Historic Homes." Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, EPA 747-R-99-001, March 1999.

Table 1. Summary Measures of Worker Exposure to Airborne Lead (Phase I)

	Number of Workers Monitored	Estimated Geometric Mean Exposure <sup>(1)</sup> ( $\mu\text{g}/\text{m}^3$ )	95% Confidence Interval for Geometric Mean	Estimated Percentage of Workers With Exposures Expected to Exceed 50 $\mu\text{g}/\text{m}^3$ <sup>(1)</sup>	95% Confidence Interval for the Estimated Percentage of Workers	
<b>R&amp;R Target Activities</b>						
Carpet Removal	14	7.54	(1.74, 32.6)	14%	(3%, 43%)	
Window Replacement	8	7.48	(1.13, 49.3)	6.5%	(0%, 50%)	
Paint Removal <sup>(2)</sup>	(Hand)	6	254.00	(23.7, 2720)	94%	(41%, 100%)
	(Power)	3	571.00	(42.9, 7600)	99%	(48%, 100%)
Large Structure Removal (Interior Demolition)	20	108.00	(26.6, 435)	83%	(40%, 99%)	
HVAC Work	4	49.60	(11.4, 216)	48%	(10%, 90%)	
Surface Preparation <sup>(3)</sup>	(Interior)	31	58.20	(2.27, 1490)	52%	(23%, 80%)
	(Exterior)	38	4.33	(0.408, 46.0)	11%	(0%, 49%)
<b>Generic R&amp;R Tasks<sup>(4)</sup></b>						
Drilling into Wood	7	15.10	(4.57, 50.2)	18%	(4%, 51%)	
Drilling into Plaster	6	6.76	(3.00, 15.3)	0%	(0%, 21%)	
Sawing into Wood	6	546.00	(366, 813)	99%	(99%, 100%)	
Sawing into Plaster	2	110.00	(0, 2.32x10 <sup>6</sup> )	76%	(15%, 99%)	

<sup>(1)</sup> Exposures represent the average lead exposure over the period in which the activity was conducted.

<sup>(2)</sup> Consists of continuous dry sanding activities (using hand or power methods).

<sup>(3)</sup> Based on data from other sources. Surface preparation consisted of a wide variety of activities including wet and dry scraping, feathering of edges, and wet and dry sanding to prepare a surface for repainting.

<sup>(4)</sup> It could not be determined from this study how much of the difference between wood and plaster substrates was due to differences in paint lead loading versus differences in substrate.

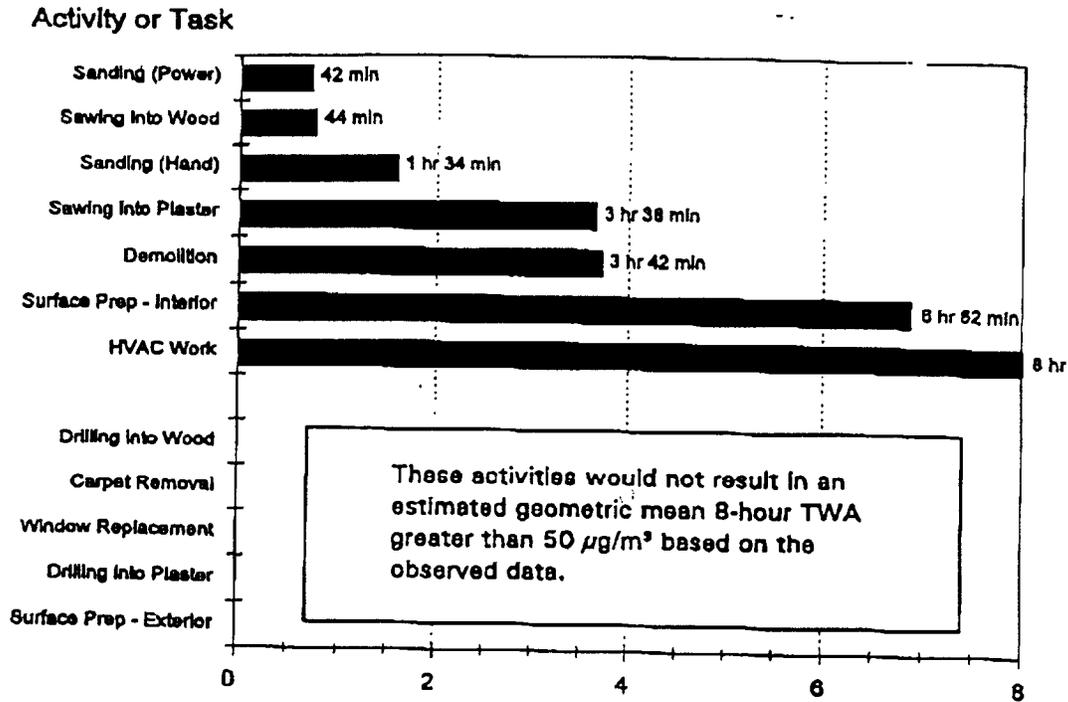
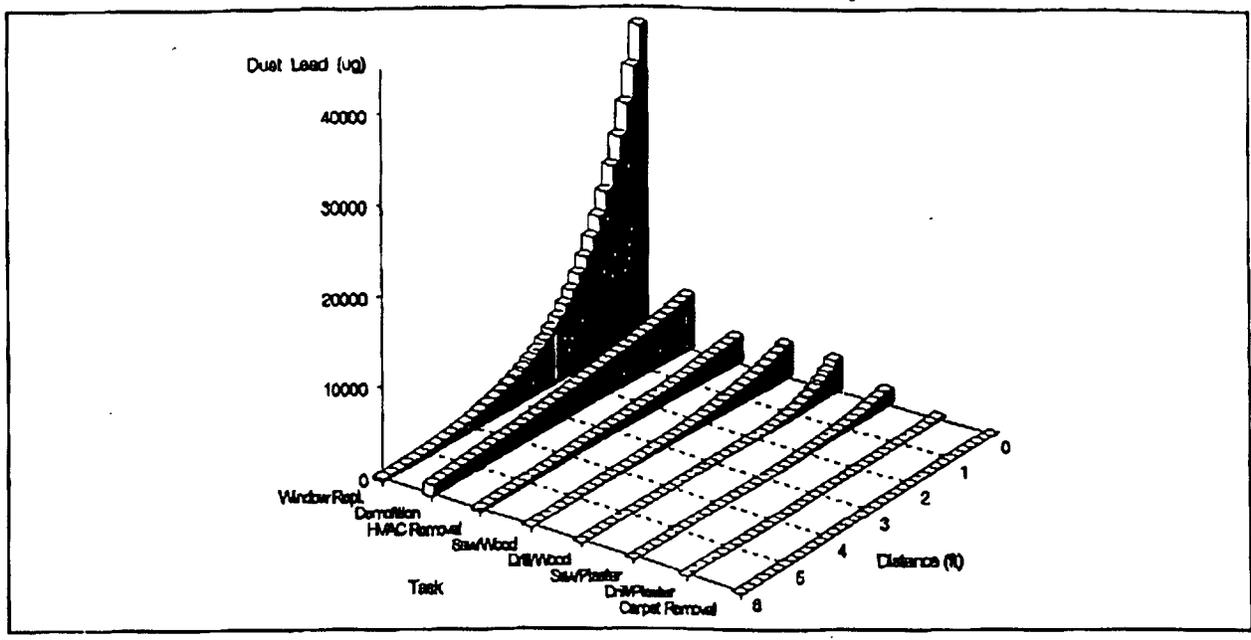


Figure 1. Hours of Activity That Would Result in an Estimated Geometric Mean 8-Hour TWA of 50 µg/m³ (Phase I)

Table 2. Summary Measures of Potential Occupant Lead Exposures that Can Result from Conducting Target and Generic R&R Activities (Phase I)

	Average Lead Loading (µg/ft²) in Settled Dust (Measured Post-Activity, Before Cleanup)		
	Estimated Loading in a 6'x1' Region Extending from the Activity	Estimated Loading at 6 Feet from Activity	Standard Unit of Activity
<b>Target Activity</b>			
Carpet Removal	16.9	<sup>(1)</sup>	100 ft²
Window Replacement	7,710.0	482	1 window
Paint Removal	42,900.0	15,500	no standard unit of activity
HVAC Work	1,290.0	414	1 room
Large Structure Removal (Interior Demolition)	3,250.0	1,530	1 room
<b>Generic Activity</b>			
Drilling into Wood	432.0	1.27	10 holes
Drilling into Plaster	34.5	0.04	10 holes
Sawing into Wood	999.0	105.00	1 linear ft
Sawing into Plaster	328.0	10.60	1 linear ft

<sup>(1)</sup> No samples were collected at six feet from the activity.



Note: Results are based on conducting a standard unit of activity (see Table G).

Figure 2. Estimated Distribution of Dust Lead In a 6' x 1' Region Extending from the Activity Area for Various Activities (Phase I)

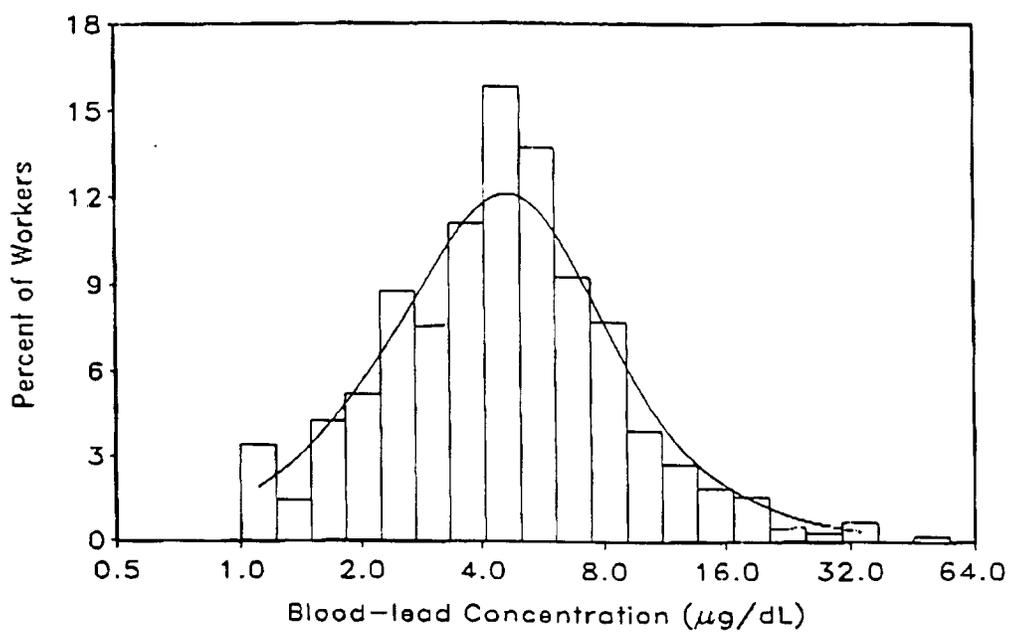


Figure 3. Histogram of Blood-Lead Concentration (Semi-Logarithmic Scale) for Workers in the WCBS (Phase II)

**Table 3. Information for an Assessment of Worker Exposures Associated with Different R&R Worker Groups (Phases II and IV)**

Study	Worker Group	# Workers Monitored	MEASURES OF WORKER EXPOSURES			
			Geometric Mean Blood-Lead Conc. ( $\mu\text{g/dL}$ )	95% Confidence Interval on Geometric Mean	Percentage That Used a Respirator <sup>(1)</sup>	Percentage That Received Some Lead Training
WCBS (Phase II)	Union Carpenters	159	4.5	(4.1, 5.0)	4	9
	Non-Union Carpenters	105	4.8	(4.3, 5.4)	12	16
	Floor Layers	82	2.8	(2.5, 3.2)	7	9
	Laborers	56	4.1	(3.5, 4.9)	23	16
	Supervisors	57	4.1	(3.5, 4.8)	5	23
	Painters	34	5.9	(4.8, 7.3)	21	21
	Drywall Workers	64	6.1	(5.3, 7.1)	2	6
	Window Replacement Workers	14	5.8	(4.3, 7.9)	14	14
WCBS-HH (Phase IV)	Carpenters	47	6.1	(5.1, 7.4)	28	30
	Laborers	42	4.2	(3.5, 5.1)	16	9
	Painters	44	6.3	(5.1, 7.7)	30	32
	Other Workers	26	5.0	(3.9, 6.4)	16	18
	Homeowners That Perform R&R	82	4.4	(3.7, 5.2)	16	N/A

<sup>(1)</sup> Does not include wearing dust masks.

**Table 4. Predicted Changes in General Worker Blood-Lead Concentrations Associated with 10 Days of Work in Pre-1950 Buildings (Phase II)**

Target Activity	Based on Model Unadjusted for Covariates		Based on Covariate Adjusted Model	
	Base Level	→ Level When Worker Conducts an Additional 10 Days per Month of Activity	Base Level	→ Level When Worker Conducts an Additional 10 Days per Month of Activity
Carpet Removal		4.4 → 4.9		4.5 → 4.1
Window Replacement		4.2 → 5.1*		4.4 → 4.8
Paint Removal		4.1 → 5.2*		4.3 → 4.8*
HVAC Work		4.4 → 5.6*		4.4 → 4.7
Large Structure Removal		4.2 → 4.8*		4.3 → 4.7
Cleanup		4.1 → 4.7*		4.3 → 4.6*
General R&R		3.7 → 4.4*		3.9 → 4.4*

\* Slope parameter estimate was significant at an alpha = 0.05 level.

**Table 5. Unconditional Odds Ratios from Logistic Regression with Single R&R Variables (Phase III)**

Variable <sup>a</sup>	Higher Risk	Lower Risk	P-Value	Odds Ratio <sup>b</sup>	Confidence Interval
Any R&R Work	Yes	No	0.0220*	1.309	(1.035,1.656)
Inside Painting	Yes	No	0.9267	1.010	(0.814,1.252)
Window Repair or Replacement	Yes	No	0.4652	1.095	(0.855,1.402)
Inside or Outside Painting	Yes	No	0.0116*	1.322	(1.060,1.649)
Prepared Surface	Yes	No	0.0038*	1.430	(1.117,1.830)
Prepared Surface for Inside Painting	Yes	No	0.0645	1.325	(0.977,1.796)
Hand Sanding or Scraping	Yes	No	0.1158	1.226	(0.946,1.588)
Power Sanding, Grinding, Sandblasting	Yes	No	0.1035	1.372	(0.930,2.025)
Open Flame Torch	Yes	No	0.01018*	4.883	(1.423,16.759)
Heat Gun	Yes	No	<0.0001*	4.697	(2.715,7.782)
Washing, Wetscraping, Water Blasting	Yes	No	0.0092*	1.625	(1.119,2.360)
Chemical Paint Removers	Yes	No	0.0046*	1.969	(1.220,3.176)
<b>Who Did the Work?</b>					
Head of the Household or Spouse	Yes	No	0.1696	1.214	(0.915,1.611)
Other in Household	No	Yes	0.0355*	3.000	(1.055,8.531)
Relative or Friend Not in Household	Yes	No	0.0015*	2.231	(1.344,3.705)
Owner or Apartment Staff	Yes	No	0.4787	1.244	(0.672,2.305)
Professional	Yes	No	0.1195	1.490	(0.893,2.486)
<b>Lived in Home While R&amp;R Was Done</b>					
Lived in Home While R&R Was Done	Yes	No	0.01638*	1.365	(1.054,1.769)
Number of Rooms	1 <sup>c</sup>	0 <sup>c</sup>	0.0007*	1.119	(1.047,1.197)
R&R Work in Kitchen	Yes	No	0.0243*	1.569	(1.052,2.340)

Note: Shaded area (and asterisk) indicates statistically significant results

- (a) If the answer to any of the following questions was "Yes", this indicator variable was set to 1.  
 (b) The odds ratio compare the odds of a child having elevated blood-lead concentrations when a particular R&R activity occurred against the odds of a child having elevated blood-lead concentrations when the particular R&R activity did not occur.  
 (c) "Number of Rooms" was included as an ordinal variable. The risk groups were chosen for illustration. More generally, the odds ratio between n+k and n rooms is 1.119<sup>a</sup>.

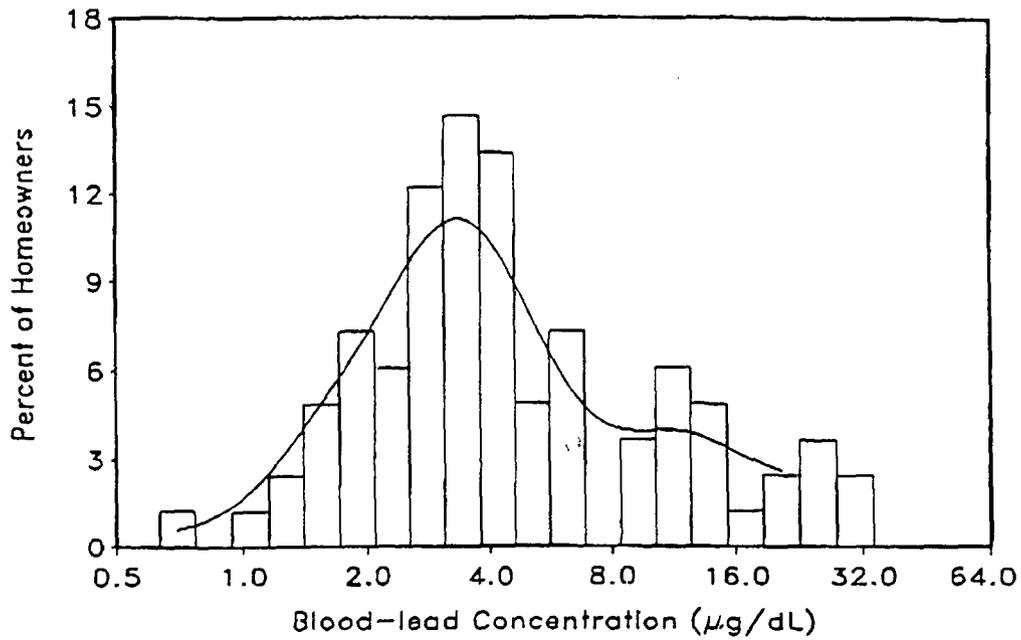


Figure 4. Histogram of Homeowner Blood-Lead Concentration (Semi-Logarithmic Scale) (Phase IV)

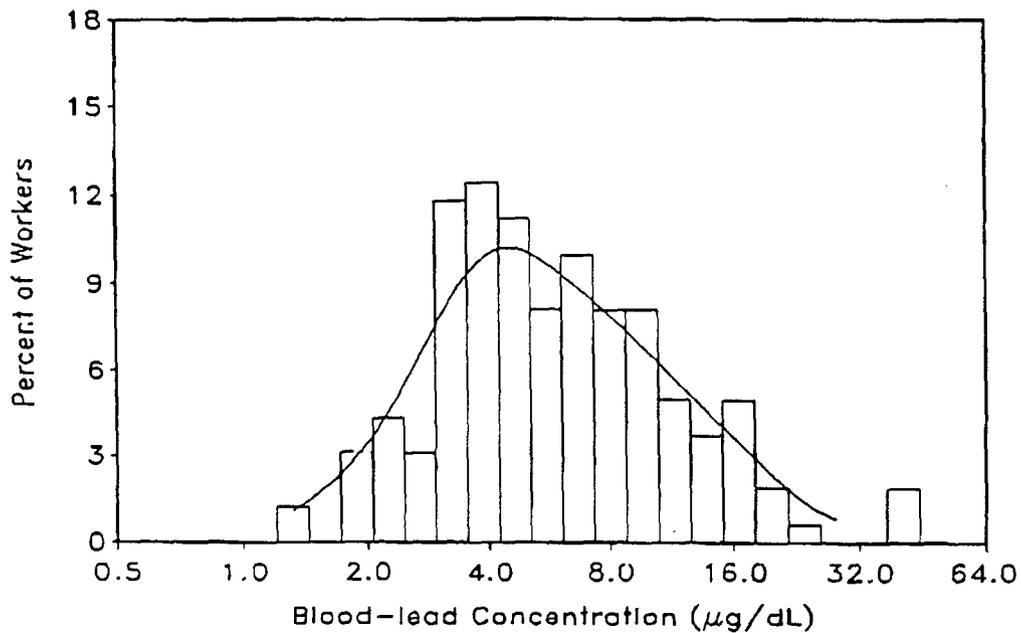


Figure 5. Histogram of Blood-Lead Concentration (Semi-Logarithmic Scale) for Workers Specializing in R&R of Historic/Old Homes (Phase IV)

**Table 6. Predicted Changes in High-Risk Worker Blood-Lead Concentrations ( $\mu\text{g}/\text{dL}$ ) Associated with 10 Days of Work in Pre-1940 Homes (Phase IV)**

Target Activity	Based on Model Unadjusted for Covariates		Based on Covariate Adjusted Model	
	Base Level <sup>(a)</sup>	Level When Worker Conducts an Additional 10 Days per Month of Activity	Base Level <sup>(a)</sup>	Level When Worker Conducts an Additional 10 Days per Month of Activity
Large Structure Removal		5.6 → 5.7		5.7 → 5.7
Paint Removal/ Prepare Surface		4.8 → 5.5*		4.7 → 5.4*
Window/ Door Casement Removal		5.2 → 6.1*		5.3 → 6.0
Carpet Removal		5.9 → 5.3		5.8 → 5.4
Cleanup		4.6 → 5.3*		4.4 → 5.2*
General R&R <sup>(a)</sup>		3.8 → 5.5*		4.0 → 5.5*

(a) The Base Level for General R&R is 10 days, for all other activities the Base Level is zero days.

\* Slope parameter estimate for days per month of activity was significant at the alpha = 0.05 level.

**Table 7. Predicted Changes in Homeowner Blood-Lead Concentrations ( $\mu\text{g}/\text{dL}$ ) Associated With Changes in the Number of Hours Spent Performing a Target Activity in Their Pre-1940 Home (Phase IV).**

Target Activity	Additional Number of Hours**	Based on Model Unadjusted for Covariates		Based on Covariate Adjusted Model	
		Base Level <sup>(a)</sup>	Level When Homeowner Conducts Additional Hours per Month of Activity	Base Level <sup>(a)</sup>	Level When Homeowner Conducts Additional Hours per Month of Activity
General R&R	80		3.0 → 4.5*		3.1 → 4.5*
Large Structure Removal	14		4.6 → 4.5		4.3 → 4.1
Paint Removal/ Prepare Surface	36		3.4 → 4.5*		3.5 → 4.4*
Window/ Door Casement Removal	6		4.5 → 4.5		4.3 → 4.4
Carpet Removal	2		4.5 → 4.5		4.4 → 4.4
Cleanup	25		4.7 → 4.5		4.2 → 4.4

(a) The Base Level is zero hours for all comparisons.

\* Slope parameter estimate for days per month of activity was significant at the alpha = 0.05 level.

\*\* The number of hours is based upon the average number of hours homeowners spent performing the target activity in their home during the last 30 days.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

# FACSIMILE

**TO: Small Entity Reps for Lead-based Paint; Certification and Training; Renovation and Remodeling Requirements**

Jeff Hurst, Hurst Total Home, Inc.  
 Brandt Domas, Domas & Associates, Inc.  
 Paul Corey, Paul J. Corey Painting and Decorating  
 Bob Hanbury, House of Hanbury Builders  
 Bill Stack, Koch Brothers Decorating  
 Keith Farnham, K&R Christopher, Inc.  
 Emma Brown, Handypersons, Inc.  
 Fred Brenner, General Plumbing Corp.  
 Fred Quercetti  
 Frank Pietranton/Chris Wallis, Peir Assoc. Real Estate  
 Richard Baker, Baker Environmental Consulting  
 Burt Olhiser, JEFFCO Painting and Coating, Inc.  
 Kevin Nolan, Nolan Painting, Inc.  
 Rhonda Daniels, National Association of Home Builders  
 Dave Potts, National Electrical Contractors Association  
 Claudia Harris, National Association of Plumbing, Heating, and Cooling Contractors  
 Eileen Lee, National Multi Housing Council  
 David Keene, Mechanical Contractors Association of America  
 Patrick Connor, Connor Environmental & Engineering Services Inc.  
 Kevin Sheehan, Lead Safe Renovations

**SUBJECT: Additional Cost Information**  
**DATE: 12/2/99**  
**PAGES: 10 (including this cover sheet)**

Please find additional information on the estimated cost of compliance with the R&R regulation currently under development. This fax is transmitting three items: 1) Preliminary Estimates of Impacts on Small Entities, 2) R&R Rule Compliance Costs, Data Sources and Assumptions, and 3) Estimated Number of R&R Events Per Firm.

Due to concerns raised by some participants regarding the cost of a 3 hour conference call, we have changed the call-in number to a toll-free number. We will call in to the old number and forward any callers to the new number. The new call in number for the R&R conference call (Friday 1-4pm) is: 1-800-205-9596.

From the desk of...

**Jennifer Greenamoyer**  
 EPA Office of Policy  
 401 M Street, SW  
 Washington, DC 20460

Tel: 202.260.7829 **220**  
 Fax: 202.260.5478



– Draft Estimates Do Not Cite or Quote –

**Training Providers**

- 177 providers from Abatement Rule + 318 “new” providers = 500 providers.
- \$1,595 per provider, over 4 years = \$429 per provider annualized. This is in addition to the Abatement Rule burdens for the existing 177 providers,
- The weighted average impact, including accreditation fees for the providers offering abatement courses, is **minimal with impacts less than 1% of revenue per year.**
- The existing 177 “full service” providers will clearly have a higher (than weighted average) overall burden, though only the 12 firms, with annual revenues less than \$250k per year, have an impact greater than 1% of annual revenues (average impact on those firms estimated at 1.2% of revenue). Notably, the smallest firms are unlikely to be full service providers, and we assume no additional revenue as a result of either the R&R or 402 Fees Rules.

**Multi-family Property Owners/Managers**

- We do not have distributional data on how many units landlords of various (revenue) sizes own/manage, or what other types of properties they own/manage. Due to the data limitations and because the burden is largely on a “per rental unit” basis, we estimate our burden ratio on a % of average rent basis.
- The *direct* impacts are related to work by “in-house” crews. For the preliminary calculation presented below we consider the case in which *all* lead-based R&R work is done by in-house crews. To the extent the work is done by an outside R&R firm the *direct* impact on the owners/managers, as presented below, is overstated.
- Using several conservative approaches we demonstrate that it would be **highly unlikely that compliance costs would exceed 1% of rent annually.** The smallest, lowest rent owner/managers who renovate very frequently may, of course, incur higher impacts than the average owner/manager.

• Average annual rent for MF building (15 units)	\$97,780
• Average number of interior R&R units in MF building	2.35
• Average <i>annualized</i> compliance cost of limited regulatory option	
Interior (per unit)	\$65
Exterior (per building)	\$46
Ave per building (int & ext)	\$196
• <b>Average annual impact as % of rental revenue</b>	<b>0.21%</b>

## R&R Rule Compliance Costs Data Sources and Assumptions

Input/Data	Source of Input	Describing Method
1. Training Costs — Number to be Trained		
Renovation & Remodeling Workers	The number of Renovation & Remodeling workers was estimated using the 1992 Economic Census of Construction Workers.	To estimate the number of workers, a set of twenty 6-digit SIC codes were identified from the original list of six 4-digit SIC codes. In order to estimate the number of employees in the relevant 6-digit SIC codes, the percentage of all 4-digit establishments contained in the relevant 6-digit SIC codes was determined. This percentage is then used to scale total 4-digit employment to 6-digit employment. There are several biases worth noting. First, the number of workers to be trained which is based on the number of workers in the 20 SIC sub-groups is probably an over-estimate because many of the firms within the SIC sub-groups do not engage in work covered by the proposed rule. Second, it was assumed that all the workers in the firm would be trained. This is probably an over-estimate since it seems likely that a firm may choose to train only a sub-set of its workers.
Lead Abatement Supervisors	The §402(a)(3) "Fees Rule" estimated that just over 1,700 supervisors will seek certification under the §402 Lead Abatement rule.	
Lead Testing Technicians	Generated an estimate of the number of technicians that will need to be trained in order to satisfy the demand to be created by §402(c)(3).	To arrive at this estimate it was assumed that enough technicians will be trained to satisfy the created demand. It is assumed that each technician can perform 10 tests per day for 280 working days a year. The total number of renovation and remodeling projects is divided by 2,800 to get an estimate of the number of technicians required to satisfy demand. There is an unknown bias in the number of dust technicians to be trained because the demand for their work is unknown.

Input/Data	Source of Input	Describing Methodology
2. Work Practice Compliance Costs — Number of R&R Events		
Prescriptive Approach  Performance Approach	Estimated the number of renovation and remodeling events that would require work practices.	Estimating the number of renovation and remodeling events that require work practices involves three major steps. First, the American Housing Survey (AHS) was used to determine the location, type, and frequency of renovation and remodeling projects. Second, <i>The Lead Dust Minimization Work Practices for Renovation and Remodeling: Draft Technical Manual</i> was used to determine what work practices are appropriate for each of the renovation and remodeling projects in the AHS. The final step is to group projects by room to determine the number of renovation & remodeling events that will require a set of work practices.

Input/Data	Source of Input	Describing Methodology
3. Clearance Testing Costs — Number of Events		
Interior Clearance Testing	Estimated the number of events that would require interior cleaning.	It was assumed that all interior LEL3 and higher events would be considered "Major Events" and require a lead clearance test as appropriate for the option under consideration. The total number of events by LEL was estimated using the 1997 AHS information.
Exterior Clearance Testing	Estimated the number of events that would require exterior cleaning.	The total number of exterior events that would require clearance testing was estimated using the 1997 AHS information.

Input/Data	Source of Input	Describing Methodology
1. Training Costs — Per Unit Costs		
Renovation & Remodeling Workers  Lead Abatement Supervisors  Lead Testing Technicians	The opportunity costs of training workers is determined by the value of the time spent in training, the value of the tuition paid, the value of any per diem paid, and the value of developing and implementing an exam.	Wage rates were based on data from the Bureau of Labor Statistics. Tuition costs were based on responses from eight lead training facilities to a phone survey. Also, each trainee is allotted \$15 per day for expenses. The development costs for an exam were derived from the Radon Proficiency Program in conjunction with EPA's estimated cost of \$430,000 to develop. A discount rate of 7 percent was then used to annualize the development cost over a five year period, as reported in the Lead Fees Rule.

Input/Data	Source of Input	Describing Methodology
2. Work Practice Compliance Costs — Unit Costs		
<p>Prescriptive Approach</p> <p>Prescriptive Approach specifies mandatory work practices to be followed for each R&amp;R event.</p>	<p>The cost of complying with the work practice standard is estimated to be the total number of events multiplied by the compliance cost per event, subtracting the cost of safe work practices already in use.</p>	<p>The primary source on the cost of work practices, equipment and materials was the Master Rehab Specifications, or SpecMaster. The SpecMaster database helps contractors estimate the cost of a renovation/remodeling project. In addition to SpecMaster, the <i>Lead Dust Minimization Work Practices for Renovation and Remodeling: Draft Technical Manual</i> provided cost estimates for particular materials. The <i>Draft Technical Manual</i> also estimated the amount of additional labor that would be required for a renovation and remodeling project using the required work practices. A survey of industry associations was used to establish the type and frequency of lead safe work practices currently in use. There are several assumptions that have likely effects on the cost estimates. 1) The aggregation of separate AHS renovation and remodeling activities into single renovation and remodeling events probably reduces the overestimation of cost by not double counting containment and cleanup expenses, but does not eliminate that bias. 2) Due to a lack of information concerning painting events the size of an average unit, and the number of events performed professionally was estimated. The size and direction of the bias is ambiguous, but we tried to err towards assuming too many events, leading to an overestimation of costs. 3) We also needed to estimate the number of rental units that underwent renovation and remodeling activities. This estimation also probably errs on the side of over estimating. 4) Lastly, for each household in the AHS, we had to determine what work practices would be required and how much the work practices would cost. The direction of bias in this estimation is unknown.</p>
<p>Performance Approach</p> <p>Would not mandate prescriptive work practices, but would necessitate testing to verify that clearance standards are met and hazard controlled.</p>	<p>The total work practice compliance costs under the performance based scenario is based on the cost under the prescriptive scenario minus the cost savings for the 60% of events that do not require the full set of work practices.</p>	<p>This analysis differs from that of the Prescriptive Approach in three ways. First, it assumes that 40% of events require the full set of EPA prescriptive work practices in order to achieve clearance. Second, that the remaining 60% require less stringent work practices. Third, there is a linear decrease in the stringency of work practices such that at the lower margin clearance is obtained using current industry practices only.</p>
Input/Data	Source of Input	Describing Methodology

3. Clearance Testing Costs — Unit Costs		
Interior Clearance Testing	Estimated costs per clearance test, based on data from clearance testing firms.	There are two approved methods to test a room for lead levels. If the room was sealed off from the rest of the house using polyethylene plastic, then three dust wipe tests are sufficient. If the room was not sealed off, eight dust wipe tests are required. Due to the high cost of clearance testing relative to the ease of sealing off a room with polyethylene plastic, it was assumed that the room will always be sealed off from the rest of the home and that three wipes will be required following all renovation and remodeling events. Nine lead inspection companies throughout the country provided estimated fees for conducting three dust wipe tests using the proposed dust wipe technician (at \$15 / hour wage rate) and prescribed lab analysis of samples.
Exterior Clearance Testing	Estimated costs per clearance test, based on data from clearance testing firms.	Nine environmental inspection companies throughout the country were surveyed via telephone. Each provided estimated fees for conducting exterior clearance testing using a dust wipe technician (at \$15 / hour wage rate). It was assumed that 15 minutes would be required for a visual clearance. Estimates for soil testing, including laboratory costs, were also collected from the respondents.

Input/Data	Source of Input	Describing Methodology
4. Administrative Costs — Unit Costs		
States' costs of: <ul style="list-style-type: none"> <li>• accrediting training providers,</li> <li>• certifying firms</li> <li>• start-up costs</li> <li>• exam costs.</li> </ul>	<p>The state implementation costs are based on responses from nine states to a phone survey conducted in support of the Section 402(a)(3) "Fees Rule."</p> <p>The analysis assumes that these costs will be covered by fees imposed on firms, and exam costs that also will be paid by firms.</p>	<p>Nine states provided information on the hours required to perform the necessary administrative activities for accrediting training providers. Though the questions were initially designed for the analysis of the broader lead abatement training of Section 402, the type of administrative activities associated with the Section 402 rule are similar to those expected for the renovation and remodeling rule. Those tasks were: application processing and record keeping; fee transaction and waivers; insurance of accreditation/certification papers; public assistance/outreach; reporting; management; and auditing training courses for training provider accreditation only. The amount of time necessary to implement the Section 402 rule was calculated as the average of the hours reported by the nine surveyed states to implement the rule. Hours are reported for three categories of workers: clerical, technical, and managerial. These hourly burden estimates were multiplied by wage rates for each job category to determine the per-entity cost of administering the rule.</p>
Enforcement Costs	Based on information developed in the Section 402(a)(3) "Fees Rule."	

**Draft Estimates Do Not Cite or Quote****Estimated Number of R&R Events Per R&R Firm and Compliance Cost Ratio by SIC Code and Firm Size**

\*Total annual number of Pb R&R events by SIC code and firm size calculated by applying the ratio (0.00029) of total number of Pb R&R events (22.3 million) to total industry revenue from R&R activities (\$77.8 billion), to the total annual R&R revenue of each SIC code revenue category. The percentage of revenue resulting from residential R&R activities, which includes work in post-1978 homes was gathered from a 1997 Remodeling Magazine survey.

\*\*Number of events per firm were calculated by dividing number of events per each SIC code revenue category by number of establishments in each category.

\*\*\* Compliance cost ratios include work practice, clearance, employee training, firm certification, and any other costs associated with the limited regulatory Approach option. Costs adjusted as appropriate, and as data permitted, for SIC code and firm size. Revenue includes all sources, including non-R&R, for average firms in a given SIC and size category.

Annual Revenue Category	Average Total Revenue per Establishment	Total Annual Number of Pb R&R Events*	Annual Number of Pb R&R Events per Firm**	Ratio of Compliance Cost to Revenue for Ltd. Reg. Option***
<b>All R&amp;R Firms</b>				
All Establishments	\$539,082	22,344,961	98	2.83%
10 M+	\$20,244,378	2,315,648	1,803	1.45%
5M-9.9M	\$6,376,316	1,306,540	568	1.49%
2.5M-4.9 M	\$3,177,217	1,538,913	283	1.52%
1M-2.49 M	\$1,366,968	3,325,836	196	2.31%
500K-999.9K	\$625,173	2,914,188	113	2.89%
50K-499.9K	\$315,754	2,321,087	57	3.00%
100K-249.9K	\$145,708	2,071,333	30	3.50%
50 K - 99.9K	\$66,661	497,933	14	3.87%
<b>1521 - Contractors, single family</b>				
All Establishments	\$283,470	2,369,063	51	2.92%
10 M+	\$13,138,958	103,545	1,170	1.39%
5M-9.9M	\$4,117,184	97,498	367	1.41%
2.5M-4.9 M	\$2,055,917	154,393	183	1.46%
1M-2.49 M	\$914,117	542,616	165	2.73%
500K-999.9K	\$427,262	437,782	77	2.89%
250K-499.9K	\$212,574	377,261	43	3.42%
100K-249.9K	\$101,764	290,803	21	3.77%
50 K - 99.9K	\$44,977	61,714	9	4.40%
<b>1522 - Contractors, other than single family</b>				
All Establishments	\$745,275	503,991	135	2.75%
10 M+	\$15,309,348	96,548	1,363	1.37%
5M-9.9M	\$4,143,134	43,335	369	1.43%
2.5M-4.9 M	\$2,174,545	32,445	194	1.50%
1M-2.49 M	\$921,763	68,289	167	2.84%
500K-999.9K	\$417,181	38,644	75	2.99%
250K-499.9K	\$213,366	30,868	44	3.55%
100K-249.9K	\$101,037	15,994	21	3.95%
50 K - 99.9K	\$45,883	4,262	9	4.39%

**Draft Estimates Do Not Cite or Quote**

Annual Revenue Category	Average Revenue per Estab.	Number of Pb R&R Events*	Number of Pb R&R Events per Firm**	Compliance Cost / Revenue Ratio for Ltd . Reg. Option
<b>1711 - Plumbing, HVAC</b>				
All Establishments	\$787,626	9,795,406	143	2.76%
10 M+	\$21,818,095	1,158,179	1,943	1.42%
5M-9.9M	\$7,056,248	627,720	628	1.46%
2.5M-4.9 M	\$3,577,489	713,452	319	1.50%
1M-2.49 M	\$1,541,015	1,444,675	221	2.28%
500K-999.9K	\$716,559	1,224,655	130	2.84%
250K-499.9K	\$364,471	900,065	66	2.91%
100K-249.9K	\$168,893	695,885	34	3.34%
50 K - 99.9K	\$77,233	132,291	16	3.65%
<b>1721 - Painting and Paper Hanging</b>				
All Establishments	\$262,928	1,438,391	48	3.15%
10 M+	\$14,106,046	47,584	1,256	1.72%
5M-9.9M	\$6,442,075	57,588	574	1.67%
2.5M-4.9 M	\$3,279,319	81,860	292	1.65%
1M-2.49 M	\$1,418,222	213,164	204	2.49%
500K-999.9K	\$656,960	221,923	119	3.07%
250K-499.9K	\$331,550	197,234	60	3.22%
100K-249.9K	\$149,753	276,752	31	3.69%
50 K - 99.9K	\$70,211	101,085	14	3.97%
<b>1731 - Electrical Work</b>				
All Establishments	\$737,979	6,069,466	134	2.83%
10 M+	\$21,427,515	817,046	1,908	1.48%
5M-9.9M	\$6,637,467	393,808	591	1.54%
2.5M-4.9 M	\$3,340,381	421,651	297	1.57%
1M-2.49 M	\$1,491,293	843,825	214	2.36%
500K-999.9K	\$682,992	670,985	124	2.91%
250K-499.9K	\$344,477	530,786	62	2.99%
100K-249.9K	\$158,728	423,159	32	3.44%
50 K - 99.9K	\$72,768	94,376	15	3.74%
<b>1751 - Carpentry</b>				
All Establishments	\$345,069	2,168,644	62	2.91%
10 M+	\$16,532,005	92,745	1,472	1.50%
5M-9.9M	\$6,397,539	86,592	570	1.50%
2.5M-4.9 M	\$3,090,220	135,112	275	1.48%
1M-2.49 M	\$1,360,159	339,328	195	2.29%
500K-999.9K	\$621,919	320,197	113	2.87%
250K-499.9K	\$317,354	330,859	57	2.98%
100K-249.9K	\$143,733	368,741	29	3.52%
50 K - 99.9K	\$67,008	104,205	14	3.84%

**APPENDIX C:**

**SUMMARIES OF PANEL-RELATED OUTREACH MEETINGS**

**(September 22 & 23, December 3, 1999)**

## EPA TSCA Section 402 Renovation and Remodeling Rule SBREFA Process Conference Call Notes

Wednesday, September 22, 1999 1:00-3:00 EDT

### Conference Call Participants

#### Potential Small Entity Representatives (SER's)

**Richard Baker**, Baker Environmental Consulting  
(Inspector, Risk Assessor, Trainer)  
**Fred Brenner**, General Plumbing Corporation  
(Plumbing-Heating-Cooling Contractors National  
Association)  
**Emma Brown**, Handypersons, Inc. (United Brotherhood  
of Carpenters and Joiners of America)  
**Paul Corey**, Paul J. Corey Painting and Decorating  
(Painting and Decorating Contractors of America)  
**Brandt Domas**, Domas and Associates, Inc. (Painting  
and Decorating Contractors of America)  
**Jeff Hurst**, Hurst Total Home, Inc. (National  
Association of the Remodeling Industry)  
**Fred Quercetti**, Property Owner (National Multi  
Housing Council)  
**Christopher Wallis**, Pier Associates Real Estate  
(Institute of Real Estate Management)

#### Government Agency Representatives

**Mike Wilson**, EPA  
**Mark Henshall**, EPA  
**Rob Beekman**, EPA  
**Tom Kelly**, EPA  
**Sandy Evalenko**, EPA  
**Jennifer Greenamoyer**, EPA  
**Dan Reinhart**, EPA  
**Heidi King**, Office of Management and Budget  
(OMB)  
**Kevin Bromberg**, Small Business Administration  
(SBA)

#### ICF Consulting

Mike Berg  
Scott Graves  
John Boyd  
Amrita Ajrawat

### Meeting Notes

Scott Graves, facilitator, began the meeting with welcome and introductions. Mr. Graves asked the small entity representatives (SERs) and EPA participants to introduce themselves.

Mr. Graves stated that this call would focus on the economics of the proposed R&R rule. He then requested the participants to complete the following statement, "*As I review EPA's economic calculations for the per unit R&R rule compliance costs, the one category (e.g., training per employee, firm certification, work practices, clearance testing) that appears to be the least accurate based on my experience is... .*"

Kevin Bromberg requested clarification for the SERs regarding the proposed cost estimates of the rule. He specifically requested more details regarding the assumptions or baseline numbers used in calculating the costs associated with work practices such as containment and cleanup.

Rob Beekman stated that these cost estimates were incremental costs based on the assumed work

practices described in the *Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual*. He added that EPA conducted a survey on existing work practices including containment and cleanup practices to gather the baseline costs. Mr. Beekman then described the cost estimates associated with a prescriptive approach and a performance based approach.

Mr. Bromberg asked if the work practices include the cost estimates for prohibited work practices.

Mr. Beekman answered yes, stating that the cost estimates depend on the tools used in the work practices.

Fred Brenner asked if the cost estimates include employee training and turnover.

Mr. Beekman stated that the cost estimates include the cost of training employees and the employee turnover rate each year.

Mr. Brenner asked how the economic analysis of the proposed rule would account for the underground economy that will arise when the rule is enforced.

Fred Quercetti stated that because most professionals do not want to jeopardize their businesses, they will follow the rules. He then asserted that costs of insurance and liability should be factored into the cost estimates.

Emma Brown added that because her firm takes on smaller jobs, the market becomes more competitive because larger firms can perform these jobs at a lower cost.

Keith Farnham stated that the costs are not the problem, rather it is the contractors who do not follow the regulations that are the issue. Brandt Domas agreed with Mr. Farnham.

Mr. Graves then asked the SERs to complete the statement he put forth earlier.

Richard Baker stated that the cost estimates associated with training, certification, licensing, and clearance testing are not realistic.

Mr. Brenner agreed with Mr. Baker that the numbers are not realistic.

Ms. Brown added that recordkeeping and administrative fees for small occurrences would be a huge burden for firms.

Paul Corey suggested that employee training and turnover be emphasized in the cost estimates. Mr. Domas agreed that both the training estimates and the work practice (e.g., containment and cleanup) cost estimates were too low.

Mr. Farnham stated that the actual costs are much higher than what is reflected in the cost estimates.

Jeff Hurst added that the cost estimates for training per employee, firm certification, work practices, clearance testing, and administrative fees were very low, and difficult to calculate because of the constantly changing day-to-day activities.

Fred Quercetti was concerned that because rental units are turned over every month the cost estimates should accurately reflect work practices, clearance, and liability factors.

Christopher Wallis raised concerns with rent-control in Washington, D.C.. He noted that because of rent control the costs of the rule for rental owners in the District will increase significantly because they will be unable to pass on their costs to renters..

Mr. Graves then asked EPA to address any clarifying questions that they may have for the SERs.

Mr. Beekman stated that for employee training, the per unit cost estimates recognize and include potential employee turnover rates.

Mr. Corey indicated that the tuition costs per employee are one-third of the actual training costs.

Mr. Baker stated that a typical price for a worker course is \$400 for a 2-day EPA model course and \$600 for a supervisor. For an 8-hour training course, Mr. Baker estimated a cost of \$150-200.

Mr. Domas suggested that a line item be added for recordkeeping and administrative fees.

Mr. Hurst asked if equipment or capital costs had been included in the cost estimates.

Mr. Beekman indicated that the work practices include all capital costs.

Mr. Quercetti asked how much time is necessary to complete clearance testing.

Mr. Beekman responded that if clearance is required, it must be conducted at least one hour after completion of work. The test results may take from 6 hrs to 2 weeks to obtain depending on the cost and the laboratory. He added that in order to receive the lab results faster, a premium must be paid.

Mr. Baker stated that, today, samples can be analyzed for as low as \$5/sample in a 24-hour period.

Mr. Domas stated that he would prefer not to begin a project or job without pre-testing for lead in a unit.

Mr. Baker answered that if proper cleanup is completed following a job, the lead levels in a unit should be lower than what they were before the work was performed.

Mr. Quercetti asked for clarification regarding when clearance testing needs to be performed.

Mike Wilson stated that any R&R work that disturbs over two square feet in pre-1978 housing requires contractors to follow this regulation. One option would require clearance testing following "Level 3: Substantial Lead Dust Generating Tasks" outlined in the *Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual*. He noted that the level one and level two tasks would not involve clearance testing.

Mr. Baker asked Mr. Wilson to explain how the three task levels described in the *Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual* were developed.

Mr. Wilson stated that EPA has been involved in writing and developing the *Lead Dust Minimization Work Practices for Renovation and Remodeling Draft Technical Manual* over the past year. He explained that there is a wide variation of R&R jobs and it would be less effective to use the same standard for all renovation jobs. He noted that the three tier system is intended to be simple, while addressing the hazards associated with the size of the job. Mr. Wilson added that EPA is open to new ideas or methods of separating these levels or categories.

Mr. Bromberg added that the levels will be discussed in greater detail in the next conference call.

Mr. Graves asked Mr. Wilson if he would like to continue the discussion of the economics of the rule or move to work practice issues. Mr. Wilson indicated that he would rather continue with the economics of the proposed rule and leave the discussion of work practices for the next conference call. Mr. Graves then asked the SERs if they had any further questions or comments concerning the cost estimates.

Mr. Baker commented that the cost estimates for clearance testing are not accurate. He stated that in his experience the cost of dust testing is \$35-\$60/hr. Mr. Wilson then asked Mr. Baker for the cost of clearance testing where 6-8 dust wipes were necessary. Mr. Baker stated that the cost would be approximately \$300 for a certified risk assessor or paint inspector to perform clearance testing.

Mr. Baker asked if clearance testing for an exterior job only requires a visual inspection or soil sampling as well. Mr. Wilson stated that the federal standard only requires a visual inspection following exterior abatement. The work practice standards that were promulgated in the 402 regulation include the standards for clearance testing of interior and exterior work. He added that states can implement more restrictive regulations than the Federal regulations.

Mr. Brenner asked about enforcement of the rule. He inquired if contractors will have to devote time to meeting with enforcement officials.

Mr. Wilson indicated that the Agency is currently deciding upon ways to handle enforcement issues. The abatement regulation provides for enforcement by requiring abatement contractors to notify the Agency before starting work. He stated that it was not likely the agency would require notification of each event from renovation contractors. Rather, the enforcement program would work on tips and complaints from consumers, homeowners and legitimate contractors. The Lead Pre-Renovation Education (PRE) Rule that was implemented in June of 1999 requires

contractors to provide information to homeowners about lead hazards. The Agency is considering modifying the document distributed to the homeowners to include the requirements contractors should follow while performing R&R work. The document will also contain a phone number for tips and complaints that could be used by homeowners to report any violations of the requirements.

Mr. Quercetti indicated that the homeowner has no incentive to comply with the rules. He stated that homeowners will hire the cheapest contractor available to perform the work and most likely disregard the rules. Mr. Wilson responded that the incentive for the homeowners hopefully will be for the health and welfare of their families.

Mr. Farnham agreed with Mr. Quercetti that homeowners do not care about training or certification because of cost concerns. Mr. Wilson responded that the statute requires the Agency to determine which R&R activities produce lead hazards, identify the contractors who produce those hazards, and then revise the lead-based paint activities regulations to apply to those contractors. The R&R regulation will be similar to the structure of the abatement regulation in that it will include requirements related to work practices, certification, and accreditation. Mr. Wilson added that the rule eventually will go forward and that the panel would work to decide how costs can be reduced.

Mr. Quercetti added that regardless of the final option chosen by the Agency, the regulation will pose a significant cost burden for renovation contractors and consumers.

Mr. Domas stated that in the painting industry, a vast majority of the work is done without regard for regulations. Mr. Baker added that this underground economy also exists in other industries.

Mr. Brenner added that this regulation will have a significant economic impact on small business owners. He asked that a distinction be made between the small homeowner and the larger multi-family owner. Mr. Quercetti added that once there are clearance requirements, litigation will increase.

Mr. Domas stated that the intention of Title X is to decrease lead hazards and lead poisoning. He added that this rulemaking needs to be considerably different from the abatement regulations.

Mr. Wilson stated that EPA has taken a flexible approach towards implementing a rule with the lowest cost, while still providing for lead safety in homes.

Mr. Baker added that the statute calls for developing a strong workforce through training and certification. He added that in order to prevent lead poisoning in homes, homeowners should be willing to accept the cost burden.

Mr. Graves asked the SERs and EPA if they had any further questions or comments relating to the economics of the proposed rule.

Mr. Hurst raised the issue of insurance costs.

Mr. Beekman requested input from the panel regarding the costs associated with clearance testing. Mr. Baker responded that the SpecMaster source used in calculating the cost estimates are unreasonable. He suggested that the pricing scheme used in HUD's Lead Based Paint Abatement Demonstration Project developed in 1991 would be more useful and applicable.

Mr. Brenner asked if a representative, Claudia Harris, of the National Plumbing, Heating, and Cooling Contractors could be included in these discussions. Mr. Bromberg then asked SERs who are interested in nominating an individual to the formal SBREFA panel to fax contact information to him at the Small Business Administration (202-205-6928). He added that EPA, SBA and OMB will jointly decide whether to convene a formal panel.

Mr. Domas stated that insurance costs are a significant factor that should be included in the cost estimates. He added that insurance is expensive and difficult to acquire as most firms need to have abatement certification before they are able to obtain coverage. Mr. Baker indicated that environmental insurance providers require licensing and costs between \$2700-\$3500/yr for \$150K worth of receipts.

Mr. Wilson asked the SERs if they carry this additional insurance presently. Heidi King asked the panel how many insurance firms actually offer this insurance. Mr. Baker stated that the insurance is available anywhere in the United States. He also stated that the prices for pollution liability insurance have decreased dramatically over the past few years. Mr. Wilson requested that Mr. Baker fax a list of insurance carriers that offer pollution insurance to Mr. Beekman (202-260-1661).

Mr. Quercetti added that if there is litigation based on improper renovation, then prices will indeed be increased.

Mr. Quercetti then asked what percentage of renovation work is done by small businesses who are legitimate firms, but do not follow the regulations. Mr. Hurst responded that approximately 90% do not follow the regulations.

Mr. Farnham added that contractors must not only keep track of their own firms but of signatory contractors as well. Mr. Domas added that real enforcement is necessary. Mr. Quercetti reiterated that the economic impacts of the rule would be dramatic and that EPA should determine a method of explaining the economic impact to the public. Mr. Baker also added that the economic impact of a child being lead poisoned be taken into account.

Mr. Domas asked Mr. Baker where one could find information regarding incidents of children with EBLs. Mr. Baker stated that the Departments of Health in each state should have this information. Ms. Brown added that the Department of Health Services in San Francisco has made a significant attempt to reduce the occurrences of EBLs in children. Mr. Baker added that the Center for Disease Control in 1998 reported that there are 890,000 children with EBLs.

Ms. King asked that applicability be discussed in the next conference call.

Mr. Graves then asked for final comments from the SERs.

Mr. Domas suggested that costs be estimated on a per occurrence/per day basis.

Mr. Brenner suggested that multi-family unit cost issues should be considered as well.

Ms. King asked Mr. Beekman to evaluate the price elasticity of demand associated with the rulemaking. Ms. King then asked how cost estimates could better reflect the underground economy. Mr. Domas added that if the legitimate businesses no longer do the work because of costs, the rule will prove to be counter-productive. Mr. Hurst, Mr. Quercetti, Mr. Brenner, Mr. Farnham, and Mr. Baker agreed with Mr. Domas.

Mr. Beekman responded that EPA is concerned about the potential underground economy. He then asked the SERs if they had any specific ideas of how the rule could be more effective in dealing with this problem.

Mr. Domas suggested that EPA should strongly support education of the public.

Mr. Graves then asked for any final questions or comments from the SERs and EPA.

No further questions or comments were raised and the call was concluded.

## EPA TSCA Section 402 Renovation and Remodeling Rule SBREFA Process Conference Call Summary

Thursday, September 23, 1999 1:00-3:00 EDT

### Conference Call Participants

#### Potential Small Entity Representatives (SER's)

**Richard Baker**, Baker Environmental Consulting  
(Inspector, Risk Assessor, Trainer)  
**Fred Brenner**, General Plumbing Corporation  
(Plumbing-Heating-Cooling Contractors National  
Association)  
**Emma Brown**, Handypersons, Inc. (United Brotherhood  
of Carpenters and Joiners of America)  
**Patrick Connor**, Connor Engineering (National Multi-  
Housing Council)  
**Paul Corey**, Paul J. Corey Painting and Decorating  
(Painting and Decorating Contractors of America)  
**Brandt Domas**, Domas and Associates, Inc. (Painting  
and Decorating Contractors of America)  
**Keith Farnham**, K&R Christopher, Inc. (Finishing  
Contractors of America)  
**Jeff Hurst**, Hurst Total Home, Inc. (National  
Association of the Remodeling Industry)  
**Eileen Lee**, National Multi-Housing Council  
**Burt Olhiser**, Jeffco Painting (Painting and Decorating  
Contractors of America)  
**Fred Quercetti**, Property Owner (National Multi  
Housing Council)  
**Christopher Wallis**, Pier Associates Real Estate  
(Institute of Real Estate Management)

#### Government Agency Representatives

**Rob Beekman**, EPA  
**Sandy Evalenko**, EPA  
**Jennifer Greenamoyer**, EPA  
**Dan Reinhart**, EPA  
**Mike Wilson**, EPA  
**Heidi King**, Office of Management and Budget  
(OMB)  
**Kevin Bromberg**, Small Business Administration  
(SBA)

#### ICF Consulting

Mike Berg  
Scott Graves  
John Boyd  
Amrita Ajrawat

### Meeting Notes

Scott Graves, facilitator, began the meeting with welcome and asked the Small Entity Representatives (SERs) and EPA for introductions. Mr. Graves asked the SERs to verify if they had received the agenda for the conference call. Mr. Graves then quickly reviewed the agenda. Because of the limited amount of time available for discussion, Mr. Graves requested the SERs to complete the following statement: "*The three (3) most important topics I would like to focus on today are...*" SERs were asked to choose from the following topics: applicability, certification, accreditation, work practices (including 'prohibited practices'), clearance, enforcement, and other. Mr. Graves added that he would prioritize the topics by the number of votes received.

Richard Baker asked for clarification concerning the distinction between certification and accreditation. Mike Wilson responded that certification relates specifically to an individual or a firm, whereas accreditation relates to the certification of a training program or provider. Burt Olhiser asked if prohibited practices are included in the work practices topic. Mr. Graves responded by saying yes.

The following table documents the votes given by the SERs:

SERs	Applicability	Certification	Accreditation	Work Practices	Clearance	Enforcement	Other
Richard Baker		✓	✓			✓	
Fred Brenner	✓	✓			✓		
Emma Brown				✓	✓	✓	
Paul Corey	✓			✓		✓	
Brandt Domas	✓			✓	✓		
Keith Farnham		✓		✓		✓	
Jeff Hurst	✓			✓		✓	
Burt Olhiser				✓	✓	✓	
Fred Quercetti	✓			✓	✓		
Chris Wallis				✓	✓	✓	
Eileen Lee	✓		✓			✓	
Patrick Connor	✓			✓	✓		
<b>TOTAL</b>	7	3	2	9	7	8	0

Richard Baker voted for certification, accreditation, and enforcement.

Fred Brenner voted for applicability, certification, and clearance.

Emma Brown voted for enforcement, clearance, and work practices.

Paul Corey voted for applicability, enforcement, and work practices.

Brandt Domas voted for applicability, work practices, and clearance.

Keith Farnham voted for enforcement, certification, and work practices.

Jeff Hurst voted for work practices, applicability, and enforcement.

Burt Olhiser voted for work practices, enforcement, and clearance.

Fred Quercetti voted for applicability, work practices, and clearance.

Christopher Wallis voted for work practices, clearance, and enforcement.

Eileen Lee voted for applicability, accreditation, and enforcement.

Patrick Connor voted for applicability, work practices, and clearance.

Mr. Graves then tallied the votes and prioritized the topics in the following manner: work practices (9); enforcement (8); clearance (7); applicability (7); certification (3); and accreditation (2). Mr. Graves stated that a majority of the discussion would be focused around work practices, enforcement, clearance, and applicability. The final 20 minutes of the call will be devoted to certification and accreditation.

Mr. Graves asked the SERs if they had any other clarifying questions or issues.

Mr. Olhiser asked about EPA's stated correlation between lead poisoned children and R&R activities. He asked EPA about the study that was used to provide this data. Mr. Wilson responded that Dan Reinhart had been working on this study specifically, and reminded the SERs that the statute directed the Agency to conduct a study of R&R activities, specifically to look at the extent contractors engaged in various R&R activities are exposed to lead in the conduct of such activities or disturb lead and create a lead-based paint hazard. The study looked at air monitoring data for workers as well as the amount of dust generated from various R&R tasks. EPA was then directed to revise lead-based paint activities regulations and apply them to those activities that create lead hazards. The study found that the dust created by a majority of R&R tasks create lead hazards in excess of the current and proposed standards. Mr. Wilson asked Mr. Reinhart to provide a brief overview of the development process of the study.

Mr. Reinhart stated that the R&R study was divided into four phases including environmental sampling and exposure to workers and children. The first phase of the study looked at the environmental samples of specific R&R activities and was a series of case studies focusing on R&R target activities and worker exposure. The second phase of the study looked at the blood-

lead level of workers. The third phase of the study focused on children and “we consider them to be the most important population.” This phase was conducted in the state of Wisconsin and utilized an existing data set of blood lead levels in children. Mr. Reinhart asserted that “It was impossible to design the ideal study.” We used this existing blood-lead data and divided children into groups, those above 10 and those below 10. The parents or guardians of these children then were contacted and asked very detailed questions about R&R activities performed in their homes during the past year.

The study found a correlation between the blood lead levels of these children and R&R activities in the home.

It was a very large retrospective study and we did find a statistically significant relationship between blood-lead levels and R&R activities in the home.

Mr. Olhiser asked if any controls were used in the study, specifically any activities other than R&R. Mr. Reinhart stated that the study undoubtedly had problems in the design but the very large sample of over 3600 children did show a correlation between blood-lead and R&R activities in the home.

Mr. Olhiser asked if any controls were used in the study, specifically any activities other than R&R. Mr. Reinhart stated that the study was very large with almost 3600 subjects involved.

Mr. Graves then began the discussion of applicability. For each topic discussed, he requested EPA to provide a five minute review of the issues or options under consideration for the proposed rule. Mr. Graves then asked the SERs for their questions or comments related to applicability.

Mr. Wilson then provided an overview of the *Options and Approaches for Renovation and Remodeling Regulations* document. He stated that the applicability options focus on which housing stock the rule will affect. The HUD Housing Survey states that a majority of lead-based paint use was in pre-1950 housing. This data serves as the basis for one of the applicability options. There remains legitimate concern, however, with the 1950 to 1978 housing. The type of activity, the amount of time, and the concentration of lead-based paint in a home are all factors that contribute to the amount of lead dust that is released during R&R activities. Mr. Wilson asked the SERs for any questions related to applicability.

Regarding the study, Mr. Hurst asked how many blood level increases were in environments that were commercially renovated, such as schools or pre-schools, and rental housing and owner-occupied housing. Mr. Reinhart responded that the questions in the study related to all types of housing, with the exception of commercial housing.

Mr. Quercetti stated the importance of obtaining data regarding the extent of the problem in order best to determine the target housing stock for the proposed rule. Mr. Reinhart stated that Phase III of the study asked extensive questions relating to the age of a house, the design of the house, and the number of units in a house.

Mr. Quercetti asked the contractors if lead-based paint was more common or more expensive when it was available. Mr. Hurst stated that lead-based paint had a better performance rating. Mr. Olhiser stated that most pre-1950 housing contain substantial amounts of lead-based paint.

Mr. Brenner asked if a comparison was made between blood lead levels found in children and the adult population. Mr. Wilson stated that developments in the last 20 years have led to a significant decrease in the blood lead levels in children. In the late 1970's, lead was banned from gasoline which led to a significant decrease in the average blood lead level in children. In 1978, lead-based paint was banned which also contributed to this decrease.

Mr. Quercetti asked if urban areas such as Baltimore, Washington, D.C., New York City, and Philadelphia have statistical data from their local jurisdictions. Mr. Reinhart stated that many of these areas do have this data.

Mr. Connor asked if the study determined if housing was owner-occupied or rental. In Maryland, Pennsylvania, Virginia, and California, studies have been done that indicate that the frequency of child lead poisoning is greater in owner-occupied housing. Mr. Reinhart answered that the study homeowners were asked questions regarding R&R work in their homes. Because activities performed in rental housing are often not performed by the tenant, it was difficult to gather reliable information concerning rental housing.

Mr. Corey asked if the incidence of increased blood levels occurred in situations where the homeowner was doing the work or where a professional had been contracted to do the work. Mr. Reinhart stated that when the homeowner conducted the work, there was a substantial reduction in the risk of exposure to children in the home. Ms. Lee stated the importance of the difficulty or size of the task. Mr. Reinhart stated that a control was put in place for the size and extent of the task.

Mr. Quercetti added that a more extensive database be developed in order to better substantiate the conclusions. Mr. Reinhart stated that the decisions were based on a variety of factors.

Mr. Brenner asked if EPA could change the year of applicability if local ordinances banned lead-based paint prior to 1978. Mr. Wilson responded that this is a good point, but it would not prevent the purchase of paint in other jurisdictions. Mr. Brenner stated that the ban on lead-based paint in New York City occurred in 1960.

Mr. Quercetti asked if there is any data from the paint industry regarding how much residential lead-based paint was sold in the 1960's and 1970's. Mr. Wilson indicated that the HUD table provides extensive and useful information about the concentration and square footage of paint in homes by date.

Mr. Quercetti asked if the Wisconsin data used in the study will serve as the basis for the applicability determinations. Mr. Wilson stated that while the use and concentration of lead-based paint was more prevalent in pre-1950 housing, EPA is also concerned about the use of lead-based paint in 1950 to 1978 housing. All housing versus rental housing was an option that was developed because a resident in a rental property normally does not have control over the

R&R activities that are performed. The regulation would allow the contractor to determine if lead-based paint was present in a unit prior to performing work.

Mr. Graves requested the SERs to make any final comments regarding the applicability issue in order to move the discussion to the next topic.

Mr. Hurst advocated the option of all pre-1950 housing for the applicability issue. Ms. Lee stated that it would be indefensible to select any option that only included rental housing. She advocated the use of pre-1950 housing for the applicability issue as well. Mr. Baker stated that rental housing should be included. He added that children of construction workers are also at risk of lead poisoning.

Heidi King raised a possible scenario to the SERs regarding the applicability of the rule: "If I am a contractor entering a home, do I know whether or not there is lead-based paint present in the home?" If not, then would a contractor or firm be required to complete the clearance testing.

Mr. Hurst stated that it is difficult for a contractor to obtain this information when a client calls for an immediate estimate to perform the work. Ms. Brown stated that her firm performs service calls and that the owner would need to be asked regarding the presence of lead-based paint in a home. Ms. King then asked if it would be feasible to determine if children were present in the home in order to identify the type of containment or cleanup necessary after R&R work. Mr. Hurst stated that a level of consistency (i.e., containment and cleanup standards) needs to be maintained in order to prevent liability issues.

Mr. Brenner asked what a contractor would need if the homeowner attests that there is no lead-based paint in the home. Mr. Wilson stated that the regulation could require documentation of previous R&R work, XRF, or paint chip analysis. Until the regulation is published, however, the specific documentation required is uncertain.

Mr. Graves then began the discussion of work practice issues. Mr. Wilson provided a brief overview of the work practice options and issues. The options listed in the *Options and Approaches for Renovation and Remodeling* document are prescriptive containment and cleanup requirements and performance-based containment and cleanup requirements. The prescriptive requirement involves work practice requirements that are similar to the abatement requirements, specifically a step-by-step procedure to preform renovation of lead painted surfaces. The performance-based option would require the contractor to contain dust in an interior work area and to control migration of dust to adjacent properties during exterior work. This option would allow contractors to complete work in the method most appropriate and cost-effective for that particular job. The performance-based option would also require the contractor to perform cleanup and clearance in order to provide proof to the Agency that work was done properly.

Mr. Hurst asked for clarification on the requirement of no exterior migration of dust to adjacent properties. Mr. Wilson stated that the purpose of the regulation is to ensure that no new lead hazards are created from R&R activities. Containment needs to be sufficient so that no exterior migration of dust occurs. Mr. Hurst stated that this requirement of no dust migration implied abatement.

Mr. Connor asked for clarification relating to the use of 2 ft<sup>2</sup> per room or 2 ft<sup>2</sup> per component. Mr. Wilson stated that there is a difference between the measurements, but EPA has not made a decision on which to use. Mr. Wilson asked for Mr. Connor's input. Mr. Connor stated that for consistency, the use of component would be more effective.

Mr. Brenner raised an issue regarding common hallways in rental housing and whether or not tenants must vacate the building while R&R activities are being performed. Mr. Wilson stated that EPA is still looking at all of the options and has not had an opportunity to study each scenario. Mr. Beekman asked Mr. Brenner what he would do if he needed to control the dust created in a hallway generated by R&R activities. Mr. Brenner replied that the only way to ensure that dust was contained would be to vacate the units adjacent to the hallway. Mr. Connor stated that Maryland has mandated simple work practices that prevent dust from entering into units adjacent to hallways. Mr. Hurst added that the HUD/NARI lead safe program has similar guidelines that may be useful to EPA in developing this regulation.

Mr. Olhiser added that larger, R&R activities should also be studied more closely.

Mr. Graves asked the SERs to provide any final concerns or comments related to the work practice issue.

Mr. Olhiser stated his concern about prescriptive work practices. He objects strongly to prohibiting work practices. Ms. Brown stated that contractors are often faced with unusual circumstances where flexibility is required and the performance-based standards would be the most effective. Mr. Baker agreed that performance-based standards be used, along with certain prescriptive standards to ensure that contractors are not producing dust. Mr. Domas stated that if the requirements become prescriptive, the rule could be counter-productive if many contractors do not abide by the rule.

Mr. Quercetti asked for a work practice description of an apartment hallway that needs light sanding and painting. Mr. Wilson stated that the practices are dependent upon the type and extent of a job and the specifics of each type of job have not been studied.

Mr. Graves then directed the discussion to the topic of enforcement. Mr. Wilson asked for specific comments from the SERs. He stated that there are concerns that only legitimate contractors, who comprise 10% of the market, will abide by the regulation, while illegitimate contractors, who comprise 90% of the market, will not follow the proposed rule and will draw business away from the legitimate contractors.

Mr. Beekman requested specific suggestions from the SERs for the enforcement of the proposed rule.

Mr. Olhiser stressed that EPA implement an extensive education and outreach program to homeowners. Mr. Farnham agreed that education is important and that an outreach program should be implemented that is similar to that of the OECA programs.

Mr. Brenner suggested that homeowners be given some responsibility to ensure lead-safety in

their homes. Mr. Wilson stated that the statute calls for regulation of contractors, not property owners.

Mr. Connor asked if EPA has studied the CFC Program that covers owner-occupied and rental housing. He stated that the program has been successful and that it should be used as a model for the proposed R&R rule.

Mr. Graves asked each SER to raise their most important concern regarding the enforcement issue.

Mr. Baker stated that given the vast number of R&R activities that occur every year, there are not enough qualified individuals to perform and ensure enforcement of the regulation.

Mr. Brenner stated that in order to make the regulation effective homeowners should be responsible for ensuring lead-safety in their homes as well.

Ms. Brown agreed with both previous respondents.

Mr. Corey stated that a joint effort needs to be made between the public and EPA to make the rule effective and enforceable.

Mr. Domas stated that true enforcement is not obtainable.

Mr. Farnham stated that residential enforcement is difficult and is not feasible.

Mr. Hurst agreed with Mr. Brenner.

Mr. Olhiser stated that if the rule is crafted with an education and outreach program for consumers and contractors and allows for performance-based standards, then the regulation will be self-enforcing.

Mr. Quercetti stated that the rule must be focused, realistic, and practical.

Mr. Wallis stated that enforcement should apply to real estate agents to make them aware of the issues related to lead-safety.

Ms. Lee stated concerns about enforcing the rule through the homeowners. Homeowners should not be held accountable for determining if work was done properly and in accordance with all regulations and statutes.

Mr. Connor stated that education for contractors should be a primary concern, while enforcement should be secondary.

Mr. Graves then began the discussion of interior and exterior clearance standards. Mr. Wilson stated that the interior clearance options include dust testing following all interior R&R activities, dust testing following specific R&R jobs, or a visual clearance following all interior

R&R activities. Mr. Wilson mentioned EPA's concern with the visual clearance option stating that lead dust is often not visible to the naked eye. He added that the exterior clearance options include a visual clearance following all exterior R&R work or soil sampling following all exterior R&R work. Mr. Wilson then opened the discussion for comment by the SERs.

Mr. Olhiser raised concerns related to interior wipe sampling because of its similarity to the abatement regulations. He suggested that pre- and post-testing be considered in order to achieve the HUD levels of clearance. Mr. Wilson stated that the goal of the regulation is to bring about a change in behavior and prevent R&R activities from creating lead hazards in homes. He asked the SERs if contractors would be interested in conducting pre- and post sampling. Mr. Olhiser responded that because clearance can be performed by individuals other than risk assessors and paint inspectors, pre- and post sampling should be included as a requirement to ensure that lead levels are at least maintained, if not decreased.

Mr. Brenner suggested that the requirement for clearance testing be phased-in and targeted primarily at unoccupied units. Clearance issues become much more complex and expensive depending on the scope, size, and extent of a job.

Mr. Hurst stated that clearance testing is a good start, as long as individuals are properly trained and certified to perform the clearance.

Mr. Quercetti asked what procedure a contractor would follow if there is a high level of lead in a home before beginning a job. Mr. Olhiser stated that the contractor should suggest to the homeowner that a risk assessor be hired to assess the home before continuing work. The homeowner then has the responsibility to determine whether or not work should continue. The majority of homeowners do not want lead hazard control work done on their homes. If the homeowner allows the contractor to continue work, the contractor's only responsibility is to make sure that lead levels in the home are not increased. Mr. Hurst and Mr. Baker agreed.

Mr. Connor asked if the interior clearance standards will require 12-15 pre- and post samples. Mr. Quercetti asked the cost of each swipe.

Ms. Lee asked if the dust swipes must be analyzed by an EPA certified lab or any certified lab. Mr. Wilson stated that any certified laboratory under the NLLAP program.

Mr. Domas asked for clarification concerning the training and cost of a risk assessor and a clearance technician. Mr. Wilson stated that EPA is currently developing a training program to certify clearance technicians to perform clearance testing. Clearance technicians will attend a shorter training course that will be less expensive. The implementation of this program will increase the availability of individuals who can perform clearance testing. Mr. Beekman added that a clearance technician will cost roughly \$15/hr. Mr. Baker stated that depending on the amount of experience and certification, a risk assessor will cost approximately \$35-\$60/hr.

Mr. Graves asked Mr. Wilson if he had any follow-up questions for the SERs relating to clearance testing. Mr. Wilson stated that he did not, and asked to begin the discussion of certification and accreditation. Mr. Wilson stated that the certification options include the

requirement of certification for all firms or the certification of only firms involved in large-scale jobs. The accreditation options include a requirement that all training providers are accredited or the option that training providers do not have to be accredited.

Mr. Olhiser stated that owners of firms should be required to receive the necessary training and certification.

Mr. Baker agreed, and stated that worker training with certification should be required.

Mr. Brenner stated that homeowners should only hire firms that are certified.

Ms. Brown stated that the owner or the supervisor of a firm should only be trained and certified. The OSHA regulations are similar in that they only require safety managers to be trained.

Mr. Farnham stated that supervisors should formally be trained and certified to ensure that workers in the field are trained as well.

Mr. Hurst stated that there also should be informal training given to the workers in the field.

Mr. Quercetti stated that only the owner of a firm should have the certification necessary.

Mr. Wallis agreed that only owners should be certified, but these owners should then be responsible for training their employees.

Ms. Lee urged that the OSHA model be considered, because it has worked for both training and outreach programs. Mr. Wilson asked the SERs about their knowledge of OSHA compliance in R&R activities. Mr. Olhiser stated that approximately 1% of contractors comply with the OSHA regulations. Mr. Baker stated that contractors do not comply with the OSHA regulations because there is virtually no enforcement of the rules.

Mr. Connor stated that a certification requirement should allow contractors to cross state lines and remain certified.

Mr. Graves asked the SERs if they had any comments or concerns relating to accreditation.

Mr. Baker stated that training providers need to be accredited in order to provide adequate training. Mr. Olhiser agreed with Mr. Baker stating that education is the most important and effective method of promulgating the regulation.

Jennifer Greenamoyer reminded the SERs that once the Federal Panel convenes, the SERs will be given another opportunity to speak directly with the formal panel members. Each SER will receive additional materials and may be invited to participate in another conference call. The Agency also will ask the SERs for their written comments.

Kevin Bromberg stated that SERs should fax their written requests along with contact information to either Ms. Greenamoyer (202-260-5478) or himself (202-205-6928) for additional

information that will be useful in generating their written comments.

In closing, Mr. Graves asked the SERs to complete the following statement, "*Mike Wilson, as you move forward in developing the rule, the most important thing you can do is... .*"

Mr. Baker stated that it is important to remember that the purpose of Title X is to ensure that children are protected from lead hazards.

Mr. Brenner believes that the rule will only be effective if homeowners are certain that contractors hired to perform work in their homes are trained and certified.

Ms. Brown stated that EPA should look at the regulation and develop it in such a way that it is flexible enough to use in everyday life.

Mr. Corey agreed with Mr. Baker.

Mr. Domas agreed with Ms. Brown, and stated that performance-based work practice standards should be implemented.

Mr. Farnham suggested that EPA consider the OSHA regulations, and create a regulation that is user-friendly for contractors.

Mr. Hurst asked that EPA consider the economic impact on small business entities, work to maintain and reduce lead levels, and provide education and outreach to the public and contractors.

Mr. Olhiser stated that EPA has an opportunity to become a partner with contractors.

Mr. Quercetti stated that the work practices should reflect the economy and remain practical.

Ms. Lee reiterated the usefulness of the cost-benefit analysis of the proposed regulation.

Mr. Connor proposed that performance-based standards be established in order to reward contractors who follow the regulations.

Mr. Wilson then thanked the SERs for their participation and input, and the call ended.

## EPA TSCA Section 402 Renovation and Remodeling Rule SBREFA Panel Conference Call Notes

Friday, December 3, 1999, 1:00 - 4:00 PM EST

### Conference Call Participants

#### Small Entity Representatives (SERs)

**Richard Baker**, Baker Environmental Consulting  
(Inspector, Risk Assessor, Trainer).

**Fred Brenner**, General Plumbing Corporation  
(Plumbing-Heating-Cooling Contractors National  
Association).

**Paul Corey**, Paul J. Corey Painting and Decorating  
(Painting and Decorating Contractors of America).

**Rhonda Daniels**, National Association of Home  
Builders.

**Brandt Domas**, Domas and Associates, Inc. (Painting  
and Decorating Contractors of America).

**Bob Hanbury**, House of Hanbury Builders.

**Jeff Hurst**, Hurst Total Home, Inc. (National  
Association of the Remodeling Industry).

**Eileen Lee**, National Multi Housing Council.

**Kevin Nolan**, Nolan Painting Inc. (Painting and  
Decorating Contractor).

**Burt Olhiser**, Jeffco Painting and Coating (Painting and  
Decorating Contractor).

**David Potts**, National Electrical Contractors Association

**Fred Quercetti**, Property Owner (National Multi  
Housing Council).

**Kevin Sheehan**, Lead Safe Renovations.

**Bill Stack**, Koch Brothers Decorating (Finishing  
Contractors of America).

**Christopher Wallace**, Peer Associates.

#### Government Agency Representatives

**Mike Wilson**, EPA

**Mark Henshall**, EPA

**Bill Sanders**, EPA

**Rob Beekman**, EPA

**Tom Kelly**, EPA

**Dan Reinhart**, EPA

**Dwayne London**, EPA

**Kay Ryan**, Small Business Administration (SBA)

**Kevin Bromberg**, SBA

#### ICF Consulting

Scott Graves

Amrita Ajrawat

John Boyd

### Meeting Notes

#### INTRODUCTIONS

Tom Kelly the Small Business Advocacy chair for the EPA began the meeting by explaining the SBREFA process. Mr. Kelly stated that this was the Agency's 16th rule to go through the small business advocacy panel. He also noted that since SBREFA was passed in 1996, this is the first rule sponsored through the TSCA statute.

Mr. Kelly explained that today's meeting would not exhaust the subject of renovation and remodeling and how it should be regulated, but it is an opportunity to listen to what their colleagues are saying. Mr. Kelly then introduced Kay Ryan from SBA and Bill Sanders, director of EPA's Office of Pollution Prevention and Toxic Substances and added that Dr. Sanders is the principle manager at EPA who will recommend a regulatory decision to the EPA Administrator.

Mr. Kelly then emphasized that under SBREFA the Agency is required to address written concerns. He stressed that the SERs should write down all comments they have and send them to EPA to provide additional information to the SBREFA panel.

SBREFA has created an avenue for small businesses to enter the rule making process while EPA is still drafting the rule. Mr. Kelly added that the remainder of this process will be reading and discussing the issues brought forth during the Small Business Advocacy Panel (SBAP) process, which will end January 24, 2000. SBAP will prepare a written report to the Administrator which will include the SERs recommendations and written comments provided to the SBAP. The report will be kept as part of the regulatory docket and anyone who wishes to view the recommendations will have access to your comments. EPA is required to respond in writing to every comment that it receives, so everyone should use this opportunity to express their concerns.

*Bill Sanders:* We're trying to get feedback from the regulated community in general, not just respond to SBREFA requirements. Thanks to those of you who have read the material that has been provided. We've broken down the key regulatory provisions of the upcoming proposal into eight different components each having several options. We'd like to get your advice on them. We've done other outreach in advance of this proposed rule making. We want to write an achievable rule that makes sense to you and to the public. We need your input because nobody knows your business as well as you do.

*Kay Ryan:* The reason your input is so important is that we are talking about making a rule that will achieve environmental objectives without hurting an important sector of the economy, namely, small businesses. For those of you participating for the first time, please be aware that in every one of our 16 panels, the participation of small businesses has made a significant difference. You have value in the process and you can make a major contribution. Your written comments are important.

*Tom Kelly:* This a three hour session and we need to be strict about moving through comments. During the introduction please tell us what type of remodeling you do and how you work to prevent the escape of dust outside the work area. Then Rob Beekman will have a 20 minute discussion on what we think this rule might cost.

Next we will cover the options EPA is considering for required work practices and this will be discussed by Mike Wilson. Mike will then lead a 20 minute discussions on clearance issues and work practice standards. Finally, we will cover training and certification in a 20 minute session, with 20 minutes to conclude the meeting.

*Mike Wilson:* As the SERs introduce themselves, could you also describe your standard cleanup practices.

*Paul Corey:* Painting contractor from Boston, MA. We do HEPA vacuuming and sanding where necessary. We bought them [HEPA attachments] so we'd be the first to have them in our area – our competition doesn't have them. We ensure the drop cloths are in place. We do a lot of cleanup with the HEPA system, we wash most of the inside with a lead containment solution.

*Kevin Nolan:* Nolan Painting. Thirty person residential painting company outside Philadelphia, PA. We focus on containment and cleanup; seal off areas to protect the occupants, using a HEPA vac, we try to

clean wet when possible, wiping things down. For exterior, we break up paint chips, we replace fresh soil and mulch. We're aware of points of entry into the home. We shut windows and seal them off.

*Brandt Domas:* Painting contractor in Denver, CO. 10 persons in the field operation. We conduct both interior and exterior repaints of residential buildings. We contain with plastic sheeting for interior jobs. Exterior we use disposable drop cloths. We do mopping and rinsing and some vacuuming and collection of chips.

*Eileen Lee:* National Multi-Housing Council. According to SIC codes, 98% of individuals who own/manage apartment complexes are by definition small businesses. The majority of their work involves minor paint repair to complete paint jobs – they are aware of current safety practices and do work with safety in mind.

*Christopher Wallace:* Peer Associates, Small Management Company in Washington, DC. We do not own any of the properties we manage. Our properties are generally single family properties. We hire contractors to do all of our work.

*Jeff Hurst:* Hurst Total Home. I'm also representing the National Association of the Remodeling Industry (NARI). My company is a full-service residential remodeling company for room additions, kitchens, and bathrooms. We are rarely in pre-1960 housing—we got out of that market. We practice safe remodeling. Our carpenters have been through the NARI and HUD safe remodeling programs. We try to do as much isolation as possible. We are aware of traffic patterns and try and confine as much as possible. We aren't doing any lead abatement projects and don't plan to; we just try to work safely.

*Bob Hanbury:* House of Hanbury. We're representing National Association of Home Builders (NAHB). We do residential and design building remodeling with 5 employees and several subcontractors. I am serving on the HUD Title X task force, so I have a pretty good handle on these issues. If there's a risk of dust or debris, we are careful about sealing off the area. Our work is demolition rather than burning or sanding. We try to follow OSHA rules and try to stay away from lead abatement work.

*Fred Brenner:* General Plumbing. We are a New York plumbing and heating contractor with 20-25 people, doing commercial and residential work. We work very clean, use plastic, take things up to keep dust from going elsewhere. We have cleanup vacuums and generally try to leave the place as clean as we found it.

*Fred Quercetti:* Apartment owner. I have apartments in Delaware built between 1967-69. Our repaints are just light sanding, so we don't generate very much dust – typical of units from that era.

*Richard Baker:* Baker Environmental Consulting. We do training dealing with lead inspection, project design, risk assessment, and abatement. We also assist abatement contractors and remodeling contractors with their OSHA and EPA compliance efforts.

*Burt Olhiser:* Jeffco Painting and Coating, Inc. We specialize in abrasive blasting in industrial applications or residential applications (removing stucco). Containment ranges from small, simple containments or modified work practices such as sponge blasting and wet blasting, to large containments (hundreds of thousands of square feet) with lots of ventilation to protect environment and surrounding residences.

*Rhonda Daniels:* NAHB. We represent the multifamily segment and the remodelers. We have an active multi-family group.

*David Koch:* National Electric Contractors Association with 5,800 union contractor members. We do

electrical installations and this may require removal of existing panels or wire. Partitions are often already removed when we work. Practices range from nothing to more extensive containments. Wet practices are not recommended around electrical work.

*Claudia Harris:* National Association of Plumbing, Heating and Cooling Contractors. We represent 5,000 plumbing/heating contractors. The majority do some sort of renovation and remodeling. It may involve removing lead but I can't speak about individual work practices of the contractors.

*Kevin Sheehan:* Lead-Safe Renovations. I'm a renovation contractor and learned some abatement methods and containment techniques over the years. I've studied some literature on how to contain dust. I've started conducting training seminars for other contractors. I provided abatement training in Westchester County, NY and NJ. Currently I teach the NH certification class. I've worked with abatement companies to do HUD readjusts, then I returned to renovation/restoration contracting – the older the better. I've studied abatement to minimize prep-work such as the use of poly-sheeting and cleanup methods including HEPA vacuuming and mopping interior and exteriors, such as porches and decks.

Other participants then introduced themselves:

Dwayne London, EPA, Office of General Counsel (OGC).

Mike Wilson, EPA, Office of Pollution Prevention and Toxics (OPPTS).

Rob Beekman, EPA Office of Pollution Prevention and Toxics (OPPTS), Economist.

Mark Henshall, EPA, Office of Pollution Prevention and Toxics (OPPTS), Chief of the Lead, Heavy Metals, and Inorganics Branch.

Frank Neumann, OPPT small business liaison.

Dan Reinhardt, EPA. Office of Pollution Prevention and Toxics (OPPTS), Statistician.

Ned Lyerly, VP of National Painting and Decorating Contractors of America (PDCA), representing small contractors.

Mary Prysock, PDCA, Legislative Affairs Representative

#### **AGENDA ITEM: COST ESTIMATES**

*Rob Beekman:* My plan is to look at attachments 6 and 7 in the information package. Rather than go through and give you updates of all the costs, I'll tell you what changes and modifications we've made and give you an introduction to three of the other handouts:

Attachment 6: This is the total cost of the rule to society. There are significant changes since the last round of discussion. In our database we discovered a number of renovation/remodeling events in rental properties that weren't being considered in our prior analyses. You don't need to worry about the increased cost to society in terms of your individual entities – unit costs are the same. Presumably we are increasing the total costs and total benefits of the rule so the unit costs did not change. Moving on to examples where the costs actually did change, these changes are a direct result of the discussions we had in September. The clearance costs were too low because we had to add travel time (in the past we went straight from spec master and just incorporated the costs associated with the actual swipe and visual evaluation). We conducted a phone survey and gathered some new numbers. The costs increased by

about \$90 per clearance event. This increased the regulatory compliance costs per event from \$77 to \$139. Your comments suggested that tuition costs and training costs were too low, so we increased that a bit. We would like some more feedback on these costs. On the 4th page of attachment 6, the final column has different units than previously – “per event” has been changed to “per employee per firm.”

Attachment 7: The R&R Rule Compliance Costs, Costs per unit – it is a new version of something we provided in the past. We will highlight the two changes that occurred from our prior discussions in September. We increased the training costs per average employee (a weighted average between supervisors and other employees and the wage rate across the US). We are averaging this out over a three year certificate, including turnover. The other change is that the clearance testing cost estimates have been changed for interior and exterior clearance based on our phone survey. Based on conversations with Kevin Bromberg at SBA, we decided to return to the concept of an “event.” We needed some unit of measurement to describe what we’re doing. We’re defining an event as a number of projects occurring in a single room at a given time. This is because costs are going to have to go with containment and cleanup, which will be multiples of the number of rooms that you’re doing at a given time. For example, if you’re doing kitchen cabinets and painting in a kitchen, presumably you’d put up one set of containment and do one round of cleaning for the job. If work is going on in the dining room and living room, this would count as two events, so clearance costs have to be multiplied by two. If you’re doing the cabinets and someone else is painting the kitchen, then you divide the clearance costs by two since this counts as only one event. This isn’t perfect, but we need to establish unit costs.

Three faxed handouts were discussed. First handout: These are preliminary estimates on the impacts on SERs (small business R&R contractors). We attempted to estimate impacts based on total revenue – what will compliance costs do to contractor total revenues. We’re assuming that you can’t pass on any of these costs. Whatever you can pass on to customers could be taken off. Definition of “small” is provided by SBA and most renovation firms and multi-family property owners and managers are small. Second handout: This is an outline of the assumptions we made – hopefully this will answer some of your questions. We can clarify these later if necessary. Third handout: This is a spreadsheet with an estimated number of R&R events per R&R firm. We had a request to clarify a few things. When you see the term R&R activities right before the parenthetical 77.8 billion, what we are referring to there are residential R&R activities. I’d like you to focus more on the first section on R&R firms – those numbers are probably more accurate than subsequent numbers where we attempt to break them out by discipline within the R&R SIC code due to data limitations. The final column is the ratio of compliance costs to total revenue and this includes other lines of business you may have. The annual number of R&R events are the ones covered by the rule that involve lead: the number of times you’d have to put up containments per year on average. Most of the firms at the table here are doing more of the R&R work than average, so that’s why the numbers may look lower to you.

*Burt Olhiser*: Were the addition of insurance premiums calculated into the costs?

*Rob Beekman*: That’s something we’re still considering and analyzing.

*Fred Brenner*: Another issue to address: when multiple contractors are working making each contractor primarily responsible for notification, cleanup, and everything else. Who is supposed to cleanup? Whose work practices were proper and whose weren’t? Figuring this out and making the contractor responsible could add significant work costs. Needs to be included and calculated. Especially in rental housing, there’s going to be a lot of litigation.

*Fred Quercetti*: After each contractor has gone through and done their work, is there any kind of dust testing required before the next person comes in?

*Rob Beekman*: In our clearance section, we basically assume end of project clearance and we assume

containment would remain until the project is complete. We have been thinking about costs for different contractors and events and how these costs would work in the rule and the marketplace. The costs will be for a particular job. Work practice costs include one round of cleanup, containment, and clearance. Several projects within one event.

*Fred Quercetti:* If there are multiple contractors working on a project, who will the rule affect in terms of liability? Where does one requirement start and where does it end?

*Fred Brenner:* Many times in multi-family residential buildings there is a requirement that a superintendent be present in a building. When the contractor arrives at the building work may already have been done by the superintendent and we still have to bring in a variety of people.

*David Potts:* This also includes electricians and plumbers. There is also the need for insurance for each of their employees.

*Kevin Bromberg:* I think that EPA is intending a single cleanup and containment. If more than one cleanup, then more than one event. The question here is how EPA accurately estimates how many events there are for a job or project. There may be a consensus about the definition of an "event." Each event includes one cleanup/one containment.

*Jeff Hurst:* Based on the comments I am hearing, a four week project may potentially have 30 events during that time period. Each event may have more than one cleanup though.

*Rob Beekman:* To be consistent, one renovation event may be the kitchen, but you might have 30 projects within the kitchen. More than one cleanup in one event will need to be assessed.

*Jeff Hurst:* Need to consider insurance costs – these cost will have to be passed on to consumers by small businesses. The costs snowball.

*Fred Brenner:* We can't even get the insurance.

*Paul Corey:* It is easier to get insurance with a single trade job.

*Mark Henshall:* There will be some costing out for the semi-specialized lead cleaning at the end of the renovation job. Dust clearance is a separate option. Know that this regulation will impose some additional costs.

*Eileen Lee:* The question is: Do we all agree what a renovation event is? TSCA 406 states that 2 square feet is a renovation event.

*Rob Beekman:* The options are discussed in the Options Paper (Document 3). This document describes options and exemptions in the applicability statement.

*Burt Olhiser:* Clearance is for occupants who live in the space. Everyday clearance would need to be performed if occupants need to reoccupy the home. The property owner has the right to make the decision in owner occupied housing.

*Fred Brenner:* In multi-faceted trades, working in residential units needs repeated cleanup, lending it to be the responsibility of the owner of the property to oversee work and control the people that they hire.

*Fred Quercetti:* How many times will clearance be required?

*David Potts:* How were the wage rates determined?

*Rob Beekman:* They were taken from statistics from the Bureau of Wage Labor.

#### **AGENDA ITEM: WORK PRACTICE OPTIONS**

Tom Kelly asked Mike Wilson to provide an overview of the Work Practice Options.

*Mike Wilson:* I want to spend a few minutes highlighting the documents. First is Attachment 3 which elaborates on the options document we developed previously and provides more background information and pros and cons. Attachment 4 is a detailed SBREFA Questions and Answers document from questions raised at the September 22 and 23, 1999 conference calls. We attempted to answer the questions posed in this document. This is a helpful document to review when preparing your written comments. The options remain basically the same as when we discussed them in the September conference calls; either a performance based approach, or a prescriptive based approach. Prescriptive standards would be like those outlined in the Draft Technical Manual. We have also developed further the performance based standards.

*Claudia Harris:* I recommend performance based standard. A useful comparison is with the CFC technician certification program. I have a long history with CFC program and have seen how lots of problems were solved and not solved.

*Brandt Domas:* PDCA is in favor of performance based options.

*Burt Olhiser:* I agree with a performance based option. When the HUD guidelines were adopted and developed, the audience in mind was an un-skilled work force that is contrary to the work force we are addressing here. Providing a performance based standard allows for better opportunities for the skilled renovation and remodeling contractors.

*Kevin Nolan:* I agree with the performance based standards because it would allow a free-market economy and the ability to use new technology at cheaper costs.

*Eileen Lee:* I have long advocated performance based standards. We have based a lot of our work on the CFC certification program. We also have experience based on HUD regulations. I also think the training costs seem extremely low.

*David Potts:* Work performed by a demolition contractor will vary from an electrical contractor. There cannot be prescribed work practices. I support the performance based option.

*Mike Wilson:* Now let us move to the second piece: **prohibited practices**. The existing abatement regulation has 4 categories of prohibited practices. What are your comments regarding the use of these practices used in the field?

*Burt Olhiser:* In terms of HUD demonstration projects, they tried open-flame burning by unskilled workers and that failed. I have done a fair amount of research to find that to be successful a highly skilled work force is necessary. Open flame burning is banned by HUD. Abrasive blasting only using HEPA vacuum is archaic. Prohibited practices restrict free-market operations. So far we have been able to adapt to the requirements. I vote against prohibited work practices.

*Mike Wilson:* Do you know of effective techniques of containing dust from blasting techniques such as wet blasting? Or do you know of any effective containment methods for sand blasting?

*Burt Olhiser:* We are working on the Bay Bridge with a 150-ft high pier. We are wrapping that with a 100% negative air containment. It adds cost to the project but demonstrates that containment can be done. On many multi- and single-family residences, stucco and paint frequently needs to be removed, best way is through abrasive blasting. Wet methods work very well too. Adding a water ring picks up the dust. There are a number of different techniques out there.

*Richard Baker:* Need to incorporate prohibitive practices otherwise the practices will still be utilized. Need to address improper use of abatement techniques. Involved with a project where sand blasting occurred in a house and two houses away children were poisoned. Improper containment practices exist; therefore, we need prohibited practices.

*Kevin Nolan:* Don't want to see any practices prohibited. Wet scrapping is messy, ineffective, and can interfere with dry areas.

*Eileen Lee:* As of November 15, 1999; several techniques were outlawed to be performed on any Federally-assisted housing and housing receiving federal mortgage assistance. If mortgage is sold on a secondary mortgage this also applies [ed. note: this does not represent an official interpretation of the requirement]. For my members this is already a done deal, under HUD's Title X. These work practices were outlawed on any Federally-assisted property which can include any secondary mortgage that is backed by Fannie Mae or Freddie Mac. Will contractors ask their clients about their mortgages?

*Burt Olhiser:* In response to Eileen Lee's comment, put prohibited practices into the guideline for unskilled workers to protect them and keep worker exposure down. NIOSH studies demonstrate that these practices can be safe.

*David Potts:* Regarding the trigger of 2 square feet: are sanding a surface or painting a surface triggered by this requirement?

*Kevin Sheehan:* Regarding the past discussion on the door, where the door surface was greater than 2 square feet: do we consider the door measurement or the actual surface?

*Mike Wilson:* If the area of painted surface disturbed is less than 2 square feet then the requirement will not be triggered.

## **AGENDA ITEM: CLEARANCE OPTIONS**

Tom Kelly asked Mike Wilson to provide an overview of the Clearance Options.

*Mike Wilson:* Attachment 8. Clearance is one of the most important issues and one of the more expensive options. Based on our September discussions, we readjusted clearance costs to range from \$100-\$150. The options have not changed: Clearance following all jobs; Clearance following high dust generating jobs; and lastly no clearance. We have provided more information in the documentation. Let me point out one important piece – this also is in Attachment 8 -- a brief summary of studies that addressed cleanup efficiency. One study examined a three-step cleanup process of HEPA vacuum, wet wash, and HEPA vacuum. In about 94% of the trials, this three-step method reduced lead dust levels to below 50  $\mu\text{g}/\text{ft}^2$ . Another study examined a two-step cleanup process of HEPA vacuum followed by a wet wash. In 90% of the trials, this two-step method reduced dust levels to below 50  $\mu\text{g}/\text{ft}^2$ . These results speak to the achievability of clearance.

*Mark Henshall:* The R&R rule addresses clearance somewhat in the abstract. EPA, in a parallel rulemaking effort, is establishing the definition of lead-contaminated dust. EPA has proposed a standard 50  $\mu\text{g}/\text{ft}^2$  as the definition of lead contaminated dust. The regulation tries to identify an acceptable/safe

level of lead in dust remaining. As always health considerations play an enormous role, however we will not finalize a standard that is not achievable (i.e. not so low that you can't clean the workspace to that level in a reasonable period of time).

*Mike Wilson:* For interior clearance in owner occupied housing, EPA is considering that the owner may sign a waiver for clearance as long as they know what they are waiving.

*Paul Corey:* The economic impact on my firm would be \$4800 due to clearance sampling which I cannot pass along to consumers. Difficult for a small firm to absorb.

*Fred Quercetti:* Workers/contractors would not like to be exposed later because of a waiver- these have to be real world practices. Must be legally standing.

*Mark Henshall:* Regulatory requirements for clearance would end at that the point the waiver is signed.

*Dwayne London:* The purpose of the waiver is not to prevent liability for the contractor. For individual states, it is a matter of state law.

*Fred Brenner:* If a contractor does work without permits, fines and penalties are imposed on the property owners. The regulation should put responsibility on the owners of multi-family housing. This regulation is lacking these requirements.

*Mike Wilson:* In the Q&A document, question 5 provides a response to that – but please provide your comment in written form.

*Burt Olhiser:* Question to Mark regarding de-leading and HUD dropping interior clearance standard to 40. Will this be 40 also?

*Mark Henshall:* That is the interim standard until the Agency passes a final standard. The interim standard is not in any way predictive of what our standard may or may not be.

*Eileen Lee:* Will the 403 regulation be published before the R&R regulation so that the clearance level is established?

*Mark Henshall:* The 403 regulation is scheduled to be published in December 2000; therefore a standard will be established soon.

*David Potts:* What consideration has been given to common ventilation areas in clearance?

*Mike Wilson:* Discussed in work practice standards to prevent the migration of dust. Recent studies done to determine ambient lead levels in homes found 2-5 micrograms per square foot.

*Richard Baker:* 14% of the nation's housing contains lead exceeding HUD lead levels and clearance standards.

*Burt Olhiser:* People are concerned about dust that is not visible and may still be contaminating children; therefore, we should go to prescribed cleanup procedures. This is not a simple matter, and it complicates a project by adding another dimension.

*Richard Baker:* I am pro-clearance. We need to establish levels in order to establish re-occupancy.

*Jeff Hurst:* We need to have standard/baseline levels before implementing clearance.

*Paul Corey:* A simple two-to-four hour awareness training is necessary.

*Burt Olhiser:* One of the things proven has been that lead poisoning occurs during abatement because the work practices didn't meet requirements. It is not so much a clearance issue; more a containment and cleanup issue. If those two things are stressed, clearance will only validate that the work was done properly.

*Kevin Sheehan:* In Massachusetts, the regulations were changed to wipe testing. One can visually clean a unit and still have considerable amount of dust. We need the validation.

## **AGENDA ITEM: TRAINING AND CERTIFICATION OPTIONS**

Tom Kelly asked Mike Wilson to introduce the Training and Certification Options.

*Mike Wilson:* The Training and Certification options remain the same as identified in previous drafts of the options paper. The options are: Training and Certification for all workers; Training and Certification for supervisors only; Training only for all workers; and Training only for supervisors.

*Kevin Nolan:* I would like it to be along the OSHA guidelines and it could incorporate the OSHA training. This would put responsibility on the supervisor to train the work force.

*Burt Olhiser:* Option 2 makes the best sense to me. A firm has to have a trained supervisor to pass the knowledge to the workers. This option will be affordable to small businesses.

*Richard Baker:* Option 2 is good provided that the supervisor trains the workers.

*Fred Brenner:* Option 2 is good because there is a smaller turnover rate for supervisors.

*Kevin Sheehan:* Option 2 is good – a distinction needs to be made for supervisors concerning the responsibility between the owner vs. the supervisor.

*Rob Beekman:* In terms of refining costs with respect to Option 2 – is it reasonable to have one supervisor trained and responsible for a number of jobs per firm?

*Eileen Lee:* Under HUD 1012/1013 – the option to waive the 8-hour training course requires work under a certified abatement contractor. Is that what we are talking about?

*Mike Wilson:* No. This would be a specifically tailored training course for R&R jobs. The abatement supervisor would retain extensive training and some grandfather clause may allow for him/her to become an R&R supervisor.

*David Potts:* Would every trade have to have a supervisor?

*Mike Wilson:* A firm could have a supervisor who could oversee several jobs at the same time.

*Fred Brenner:* Seems to me that different trades generate different amounts of dust; training needs to be different for different jobs.

*Paul Corey:* We need an outline of the instructor's manual for a 4-hour program for supervisors. This looks like an abatement program, not awareness.

*Richard Baker:* A one-day training course for R&R supervisor – what will prevent these jobs from

becoming abatement jobs?

*Mark Henshall:* A lot of people know now that there are large-scale painting jobs that are abatement but to avoid those rules, they become R&R work. Some projects fall into gray areas; people are concerned about lead. A renovation contractor's job is not to create any new "lead hazards." The market will decide who is qualified to perform the work.

*Richard Baker:* The issue being that a lead abatement supervisor has a 32-hour minimum training, and this perhaps is an 8-hour course.

*Mark Henshall:* It will be dictated by the market. Abatement contractors are available and it becomes the discretion of the person wanting the work or buying the service.

*Kevin Sheehan:* Renovation vs. Abatement. This being regulatory in nature, we shouldn't forget that there is a market segment that wants renovation done, wants a high-level of skill, without the creation of lead hazards. If abatement contractors are only allowed to provide services, there is no highly skilled renovation/remodeling work force to offer to the market.

#### **AGENDA ITEM: GENERAL DISCUSSION AND CONCLUDING REMARKS**

*Brandt Domas:* Mr. Beekman, do costs for the contractor to meet clearance standards include the cost of a professional coming in to do clearance? If so, as a result I will have to take time out of my work day to meet with the professional. Do I have to meet with him every time a job is done or just one time?

*Rob Beekman:* That was not included in the costs. We will consider that. Please provide information in your written comments.

*Fred Quercetti:* Are we going to discuss the application of the rule? It is very important to delineate which housing will be affected. (Attachment 3, Option 3). There needs to be a discussion concerning multi-family and single family dwellings. How does the Agency feel about these options?

*Mike Wilson:* A table from HUD (Attachment 9) talks about the amount of lead in a home during different time periods. Lead-based paint was used in residential settings up until 1978 and there is risk in housing up until 1978, especially pre-1960 housing.

*Fred Quercetti:* So if a house is certified lead-free, then the rule doesn't apply?

*Fred Brenner:* Where a larger job is involved with multi-family housing, for instance re-piping the building and the owner decides to hire an abatement contractor to do the containment and cleanup, is the contractor absolved from responsibility?

*Kevin Nolan:* It is problematic to do clearance in an owner/client's home when we work in multiple rooms. Each room would be a waiting period of at least 24-hours and would be a severe inconvenience to clients.

*Fred Quercetti:* I require any trade that comes into my units to have insurance and a statement that they will follow applicable codes. Housing from 1960-1978 has low probability of lead in the homes and should be investigated through empirical data.

*Kevin Sheehan:* Owner should ultimately have a contract with someone who has the responsibility in the end. Another concern is the pre-inspection for certified lead free issue and getting the information from the owner when a renovation occurred. What about the availability of inspectors? Is it necessary to get

an inspector to certify lead-free on every instance?

*Mike Wilson:* The options paper discusses this issue. The owner must present documentation to the contractor when work was done previously.

*Eileen Lee:* Question of average number of events per unit in multi-family housing. Is the definition 2.35 events/unit building?

*Fred Quercetti:* I think that the number of events is definitely underestimated.

*Rob Beekman:* What about this rule is triggering a need for any more liability insurance?

*Fred Brenner:* Puts contractors at risk.

*David Potts:* The individuals and firms who could be held responsible under the class action suits.

*Paul Corey:* Standard liability insurance doesn't cover lead events. We can't get the insurance. No company will offer it. If the public is aware of these hazards, then the insurance firms would offer it.

*Christopher Wallace:* Homeowners cannot get lead insurance in D.C. Maryland has limited liability.

*Fred Quercetti:* These cases would dramatically affect the market place and require everybody to arm themselves. There will have to be protection against litigation. Realize that it will be translated into costs for the contractors. Insurance companies will not insure against environmental hazards.

*Fred Brenner:* The owner of the property should take responsibility for what exists and what work should be done.

*Fred Quercetti:* The owner should put responsibility onto the contractor who does work and is the expert. I won't assume any more responsibility than I am required under the law.

*Paul Corey:* The owner and the contractor should both be held responsible.

*Fred Quercetti:* The owner should assign responsibilities to individuals.

*Jeff Hurst:* There should be a requirement that the owner provide existing baseline conditions to the contractor.

*Tom Kelly:* We will end the discussion now. Thank you all for participating. I would like to remind you that this panel process is underway. The members of the panel that will review this rule are: Heidi King, Jerry Glover, Kevin Bromberg, and Bill Sanders. We will be reviewing all of these comments as well as you're written comments. The package that we will prepare and present to the Administrator of EPA will include our recommendations, a summary of your comments and concerns, and your actual letters. It will be accessible in the public docket. We invite you to comment on the things that you care most about by December 17, 1999. The panel report will be released after the rule is proposed.

**APPENDIX D:**

**SER's WRITTEN COMMENTS**



# Baker Environmental Consulting, Inc.

7941 Westgate Street Lenexa, Kansas 66215-2636

Voice: 913-541-0220 Fax: 913-541-0457

Email: The Pb Man@aol.com

December 14, 1999

Ms. Jennifer Greenamoyer  
EPA  
401 M Street, SW  
MC 2136  
Washington, DC 20460

RE: R & R Contractor Certification and Training Requirements

Dear Ms. Greenamoyer:

I want to first of all thank you for allowing Baker Environmental Consulting, Inc. (BEC) to participate in the SBREFA Panel discussions regarding the training and certification requirements for Renovation and Remodeling (R & R) contractors. We very much appreciated the opportunity to participate in the discussions regarding the development of a new federal regulation. We also appreciate this opportunity to provide written comments regarding the proposed rule.

Having been in the lead inspection and abatement industry for over 23 years, from both the regulatory and the contractor perspective, I am very interested in the development of any regulation which seeks to prevent lead poisoning. I have personally and professionally witnessed the devastation and trauma brought on by having a family member permanently and irreversibly impacted by this silent killer. It is extremely important that all of us remember the permanent, irreversible and adverse health effects of lead, both physiological and psychological, as we discuss the means for regulating an industry which has the great potential of causing lead poisoning. I have personally witnessed countless children who have been lead poisoned and negatively impacted by R&R activities.

During our SBREFA Panel discussions, several issues were brought up which caused me to have a great deal of concern. Following is a list of those issues:

- There should be no clearance sampling done by anyone who has not been state or EPA certified/licensed as a Lead Risk Assessor. The stated purpose of a Lead Risk Assessment is to identify lead hazards, of which dust is one of the most significant. Several thousand people across the nation, including myself, have spent at least five (5) days out of their lives to go through the EPA Model Curriculum courses to become a Risk Assessor so that they could collect dust lead clearance samples. Not only have we spent this time away from "bill paying" work to become certified/licensed, we have also paid for lodging costs, meal costs, travel costs, and paid the certification/licensing fees in order to become a Lead Risk Assessor. I am aware of numerous instances where individuals have incurred costs exceeding \$3000.00 to become a Lead Risk Assessor. Now, as a result of this proposal, these people who have spent the time, effort and money to become certified/licensed will be



“slapped in the face” because of this “one day wonder” training/licensing proposal.

If the issue is a concern about whether there are sufficient numbers of certified/licensed Lead Risk Assessors to perform the R&R clearance sampling work required, my nationwide contacts are telling me, and I can attest to the fact, that there is little if any Lead Risk Assessment work to be done now. These people are very hungry for Risk Assessment work to perform. One of the stated purposes of Title X was to develop a readily available workforce of competent persons. This proposal will ensure the exact opposite and produce a lesser number of less qualified and competent people to perform the work. What would happen to the R&R industry if all of a sudden electricians, plumbers and all other trade persons only needed a one day class to become certified and/or licensed?

If the issue is the expense of having a Lead Risk Assessor perform the clearance sampling, that issue will take care of itself. If the Lead Risk Assessment clearance sampling market increases, more people will enter the market. The combination of certified/licensed Lead Risk Assessment persons being “hungry” and the increased numbers of people entering the market will increase competition, which will drive prices down.

- Clearance sampling should be performed on all projects when it is known or assumed, based upon age of structure or some other logical factor, that lead-based paint and/or lead hazards are present. The purpose of dust lead clearance sampling is to help determine if a structure, or some part of a structure, is ready for reoccupancy, based upon known adverse health threats. We would be negligent to allow anyone to reoccupy a structure or any part of a structure when it is known or can be logically assumed that a health hazard exists. The clearance standard used should be consistent with the EPA proposed dust lead clearance standards of 50  $\mu\text{g}/\text{ft}^2$  for floors, 250  $\mu\text{g}/\text{ft}^2$  for window sills/stools and 800  $\mu\text{g}/\text{ft}^2$  for window troughs.
- There is a need to clearly state that there are prohibited R&R practices. Because it is empirically known (through NIOSH, EPA and through actual EBL case studies) that certain work practices have the actual capability or potential probability of causing lead poisoning, those practices must be clearly identified and prohibited. Without the prohibition, those practices will be used and the result will be lead poisoning.

If the issue is said to be that R&R Contractors will use the appropriate engineering controls, work practices and clean-up procedures to ensure that lead hazards are not generated or remain after an R&R activity, my only response is **ABSOLUTE AND COMPLETE NONSENSE!** Anyone who has ever had any R&R activities performed for them, or anyone who has inspected R&R activity work, can readily agree that the contractors do not/will not take the time to be more thorough. To paraphrase consistent quotes from a number of R&R Contractors who I have spoken with over the years; “additional engineering controls, work practice controls and/or clean-up procedures means more equipment and materials, which means more time and effort, which means more time on-site, which means less productivity, which means decreased profits in an already low profit industry. The majority of people who want R&R activities performed will simply not want to, or will not be able to, pay for all of the necessary extras.”

If the issue is said to be that this is a common law issue, I would also have to completely disagree. Most people who have R&R work performed cannot afford the time and legal expenses necessary to recover damages or to have the work performed properly. Most R&R Contractors will have insurance and/or bonding companies to cover issues of non-

performance and tort liability. Those companies have a far greater economic capacity to withstand litigation. Most R&R Contractors also have a far greater economic capacity to become involved in litigation than do most homeowners. Additionally, in numerous instances when a contractor becomes involved in litigation, they simply move to another location or declare bankruptcy, whereupon they open a new R&R business under a different name. Regardless of the issues which may be brought forward, the end result is the same, lead poisoning will continue (or increase) and the families will needlessly suffer.

- Supervisors for R&R Contracting firms must be licensed and must be on-site at all times. While we would agree that perhaps a Supervisor for an R&R Contracting firm would not need to become certified/licensed as a Lead Abatement Supervisor, we are firm in our knowledge that these people should receive appropriate training on the hazards of lead, engineering and work practice controls, the proper means for reducing the worker's potential for exposure to lead, the suitable means for disposing of properly characterized wastes which have been generated, and the proper means for cleaning up after an activity which creates lead hazards.  
The person/firm providing this training must be real-world knowledgeable in construction activities, must use and properly teach a standardized model curriculum and must be accredited to provide the training.  
A Supervisor must also be on-site at all times throughout the R&R process to help to ensure that all facets of the training are being complied with. A Supervisor who is running between several projects simply cannot devote the appropriate and requisite time to any one project which is needed and essential.
- This proposed rule must be applicable to all pre-1978 housing stock. If it is known that an estimated 62% of all pre-1978 housing contains lead-based paint (as stated within EPA Model curriculum training materials), we would be remiss to not include all housing within this group for this rule.
- This proposed rule should allow for exemptions under special circumstances. The two illustrated exemptions in the SBREFA Panel materials are for R&R activities which impact less than 2 square feet and in extreme emergency situations. We agree with both of these exemptions, but are adamant that clearance sampling must be conducted after completion of these exempted activities. If any other R&R activity continues after the exempted activity completion, then we strongly favor full compliance with a public health based requirement for the conduct of R&R activities, much like that which is shown above and/or within the SBREFA Panel materials.
- All R&R firms must be certified to perform work on all pre-1978 structures. We are in complete agreement with this proposal, as long as the contractors certify that they will only use properly trained and/or certified individuals to conduct the work, and as long as the contractors certify that they will follow all applicable prescriptive work practice standards, using state-of-the-art procedures. The prescriptive work practices must be stringent, but flexible, enough to allow the contractor to employ the best suited practice for the individual situations, but descriptive enough to ensure that at least some type of proper and adequate work practice is utilized.



- An exterior visual clearance must be conducted. We are very much in favor of a visual clearance being conducted for all exterior R&R work on all pre-1978 structures, as long as the person conducting the visual clearance is a certified/licensed Lead Risk Assessor, as long as there is a visual clearance standard stating something to the effect of "there shall be no visible dusts or debris", and as long as that certified/licensed person provides a clearance certification. Without the visual clearance, it can be logically deduced that debris will remain behind, as leaving debris and dust behind has been the apparent typical R&R standard operating procedure.

We remain committed to the prevention of lead poisoning. It is based upon our complete commitment that we have provided all of the above comments. We hope that you find our comments to be of real value and that you will strongly consider our comments as you begin the complex task of developing the final rule.

We again want to express our appreciation for allowing us to participate in the SBREFA Panel discussions and for allowing us to participate in the written comment process. Should there be any comments or questions regarding our comments, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard A. Baker".

Richard A. Baker, CPS  
President  
Baker Environmental Consulting, Inc.

**COMMENTS SUBMITTED TO THE SMALL BUSINESS ADVOCACY REVIEW PANEL  
FOR LEAD-BASED PAINT; CERTIFICATION AND TRAINING; RENOVATION AND  
REMODELING REQUIREMENTS**

The National Apartment Association (NAA) and the National Multi Housing Council (NMHC) represent the nation's leading firms participating in the multifamily rental housing industry. Our combined memberships are engaged in all aspects of the development and operation of apartments, including ownership, construction, finance, and management.

NAA/NMHC are strongly supportive of policies and regulations to eliminate childhood lead poisoning and as such have participated in both Department of Housing and Urban Development (HUD) and Environmental Protection Agency (EPA) panels to work through practical methods for implementing the statutory charge under the Residential Lead-Based Paint Hazard Reduction Act of 1992.(hereinafter referred to as Title X). We are committed to effective practices to reduce the threat of childhood lead poisoning.

The U.S. apartment industry provides homes for approximately 25.7 million families and individuals nationwide, representing the full spectrum of America's population. In addition, to providing housing, the apartment industry is predominantly comprised of small businesses. According to the 1992 Census of Finance, Insurance, and Real Estates, of 40,455 firms reporting that their business was "Operators of Apartment Buildings" (SIC Code 6513), fully 39,903 had annual revenues below \$5 million. Thus, 98 percent of the firms principally engaged in apartment management are small businesses by definition under Small Business Regulatory Enforcement Fairness Act.

The § 402 rule will have a considerable impact on small businesses that own and manage or perform repair operations on rental property. A recent study by the Commerce Department's Census Bureau reported that small property owners are very concerned about the implicit financial burdens associated with federal lead-based paint requirements.<sup>1</sup>

---

<sup>1</sup> U.S. Bureau of the Census (1998). *1995 Property Owners and Managers Survey*. H121/98-1.

We appreciate the opportunity to provide EPA with our comments on several specific regulatory options the Agency is currently considering under § 402 (a) of Title X.

**1. APPLICABILITY.** The limited regulatory option considers using 1978 or 1950 as the date for determining whether action on a particular property would be covered by the regulation. We believe that the regulation should be targeted to properties most likely to contain high concentrations of leaded paint and thus pose the highest risk to children.

The most recent data on the incidence of childhood lead poisoning compiled by the Centers for Disease Control and Prevention (CDC) through the National Health and Nutritional Examination Survey III (NHANES) states that "non-Hispanic black race/ethnicity, low income, and living in housing built before 1946 were independent predictors of elevated BLLs in children aged 1-5 years." Moreover, the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* (1997 revisions) reflect an approach to testing pre-1978 homes for lead that contains a two tiered scheme with greater scrutiny being applied to pre-1960 construction. is based on age of housing. This protocol which is contained in chapter 7 of the HUD Guidelines has been approved by EPA as the basis for numerous state certification programs under § 402/404 of Title X.

In addition, reports collected by lead-based paint inspectors in states including Maryland, Florida, California, Texas and New Jersey have found that less than thirty percent of the post-1960 constructed multi-family housing communities contain lead-based paint. Typically, lead-based paint found this property type is present as factory applied primer to metal surfaces, parking lot stripping paints and exterior trim applications. These locations are well-defined (e.g. interior steel staircases, exterior lintels and wood trim) but for the most part, they are built in to the matrix of the structure. This makes it virtually impossible to simply "remove" the component in order to eliminate lead-based paint from the property. Studies performed by HUD have shown that lead-based paint on these surfaces do not readily pose a hazard to the health because the layer of lead-based paint is typically less than 0.5 mil thick and is typically under four layers of intact non-lead based paint.

Reports from health departments around the country continue to indicate that the vast majority of reported/investigated cases of elevated blood lead levels in children are in residential properties (rental and owner-occupied) and child-occupied facilities (schools and daycare centers) constructed prior to 1950. The profile of the rental property most frequently implicated in these cases fall into the one to four unit classification.

EPA should opt for a regulatory approach which is targeted to the problem rather than invoking an overly broad program which will involve many more housing units at

considerable cost but will not have commensurate benefits to children's health. Once success has been established in the high risk category EPA could phase in broader action over the next ten years to other market segments.

We do not believe that tying the applicability of the regulations to the type of real estate transaction (i.e., rent vs. own) that puts a child in a property consistent with the statutory direction of Title X. Rather the emphasis should be placed on year of construction and census tract data which the Centers for Disease Control and Prevention and the U.S. General Accounting Office have found to be strong predictors of child exposure.

**2. TRAINING OF WORKERS.** The proposed regulation will effect routine, ongoing maintenance activities on multi family properties. As such it is very important that EPA understand that maintenance workers, housekeepers and grounds keepers on multifamily properties are not abatement contractors nor do they function as such in the real world meaning of the term. EPA considers any worker who removes dust to be performing an abatement activity under the definitions contained in Title X; workers who vacuum carpets at the entrance to a lobby may indeed be vacuuming up lead-containing dust which has been tracked in from out of doors but they are not performing the same "type" of abatement that a worker who is removing building components that have been painted with lead-based paint. We believe that EPA needs to do considerably more work to refine the scope of worker which will be covered by this regulation.

We support performance based training for individuals who are involved in activities which disturb lead-based paint. Our industry has worked very closely with the Occupational Safety and Health Administration (OSHA) in the development of the Lead Advisor which is an interactive computer program to assist workers in complying with the OSHA lead in construction standard (29CFR 1926.62). To augment the requirements of the OSHA standard with practical methods for performing "lead-smart" maintenance activities, NAA/NMHC commissioned the production of a video training program specific to the routine maintenance situations found on market-rate multifamily rental properties.

Appropriate models exist for establishing the competency of workers to safely perform tasks considered to have high risks associated with them. The first is the EPA certification of workers that conduct maintenance activities on equipment containing refrigerants. Workers are required to demonstrate proficiency on the topic rather than complete a specific proscribed course. A second example is seen the current EPA policy that certifies an environmental professional to become a radon tester or radon mitigation contractor. The length of training, the duration of a class is not a prerequisite

to obtaining certification; the prerequisite to obtaining this certification is demonstrated knowledge and proficiency.

There are many options for obtaining sufficient information on safe lead-based paint work practices necessary to acquire certification. These include video materials, remote distance learning alternatives, Agency-prepared field guides and classroom instruction. These options are contained in the Title X Task Force report.

EPA has used an unrealistically low cost in considering the training option. Tuition for participants in a lead-based paint training courses developed under a HUD grants is \$375 for an 8-hour cost. EPA has Addition expenses incurred by the employer in would be overtime wages (at time and a half) to compensate for the time away from the job and incidental costs such as travel.

In addition to the above mentioned considerations, EPA should consider the sheer number of times training will be required to be undertaken by employers in the face of employee mobility. Studies performed by the apartment industry have found that 70% of service technicians change jobs annually while service maintenance supervisory level staff have an annual turnover rate of approximately fifty percent. The turnover rate for on-site property managers is approximately thirty percent per year. If EPA's notion of having a "certified" program includes fees and administrative record keeping, this increased financial burden must be reflected in the Economic Evaluation.

Based on our experience with EPA's current certification program for Abatement Workers, Contractors, Inspectors and Risk Assessors, we believe that EPA's proposed "certification" program under this rule will (1) add burdensome layers of Federal, state and local fees and administrative record keeping requirements; (2) prevent small businesses from engaging in businesses across state lines due to individual state requirements; (3) restrict the availability or restrict access to knowledge lead safe workers; and (4) significantly increase the cost of routine work or renovations.

NAA/NMHC endorses a program which recognizes trained individuals.

**3. WORK PRACTICE STANDARDS.** NAA/NMHC support the notion of performance based standards. The OSHA lead in construction standard already regulates these activities. In order to facilitate compliance with existing regulations, NAA/NMHC requested that OSHA develop an expert system for the Lead in Construction Standard. Subsequently, we worked with OSHA to beta test the product and have distributed copies of the software to our members and widely publicized the availability of this material.

**4. PROHIBITED WORK PRACTICES.** On September 15, the U.S. Department of Housing and Urban Development issued final regulation under §1012/1013 of Title X. Those regulations contained a prohibition on certain specific work practices (Attachment A) based on the threat that these practices posed to human health. EPA staff have indicated that they would not be similarly proscribing these techniques under the § 402 (a) rule but were leaning towards prohibiting open flame burning indoors under certain conditions.

We are concerned about this for three reasons: (1) Open flame burning of lead (even outdoors) causes significant releases of lead into the atmosphere which eventually attaches to dust particles and becomes part of the overall environmental lead burden. On another EPA rulemaking dealing with hazardous waste burning cement kilns, NAA/NMHC have strongly opposed standards which would have lessened restrictions on air lead emissions. Any lead that is emitted into the atmosphere becomes a contaminant of the dust and soil on residential properties.

(2) It is common for multifamily property owners/managers to contract with outside firms to conduct repair/renovation activities on their property. Deployment of these paint removal techniques is expressly prohibited on certain properties by HUD. It is unreasonable to expect that persons who are contracting with a knowledgeable professional service provider should be expected to police the work practices that may be used in conducting the job. Moreover, once these techniques are performed we are concerned about the resulting "lead contamination". See section 5 below on CLEARANCE TESTING.

(3) Under the same statutory authority (Title X), two federal agencies have come up with very different perspectives on what constitutes a safe work practice as it affects the health risk to persons living in a home that is undergoing repair or remodeling. Health is not affected by the nature of the financial transaction that places an individual in a residence. It is impossible for any business and particularly small business to deal with conflicting and ambiguous regulations.

If, as HUD suggests, there is a sound, scientific basis for asserting that certain work practices pose an unacceptable risk when used in a residential setting, then EPA should adopt this finding as part of the § 402 rule. If on the other hand, there is no basis for the regulatory burden HUD has imposed on millions of property owners, we wish to be informed so that we may pursue this matter in another venue with HUD.

Among the purposes of Title X is the specific charge "to ensure that the existence of lead-based paint hazards is taken into account in the development of Government housing policies and in the sale, rental and renovation of homes and apartments." In order to be consistent with the intent of Title X, it is incumbent upon federal regulators

to put forth a message which is clear and consistent and not shirk their duty to inform renovators that some techniques are too dangerous to be performed safely or in the alternative give a wink to bureaucratic excesses promulgated by an Agency with which it shares jurisdiction and enforcement authority under the same Act.

**5. CLEARANCE TESTING.** We support the Title X Task Force recommendations which called for clearance testing after certain jobs on a property sufficient to generate a historical basis for understanding (1) the level of lead-containing dust that will be generated by that type of activity and (2) the appropriate technique for reducing any lead-containing dust that is generated to levels below those considered to pose a hazard to health. We see the need for an objective way to evaluate whether a specific job is likely to generate a lead-dust hazard and an objective method for qualitatively evaluating dust clean-up techniques.

Once property owners can demonstrate that units cleaned by their work crews consistently passed dust test, the benchmark standard allow the owner to rely on dust tests performed in a sample of treated units reducing the cost of dust testing for a property.<sup>2</sup>

On a specific apartment property it is possible to perform a series of dust wipes at appropriate times while performing routine repair activities which disturb more than 2 square feet of painted surface. A requirement that multifamily properties undertake this sort of analysis would be a reasonable regulatory approach. Clearance testing after every repair activity every time it is performed on the same property is not a reasonable approach.

It appears to us that EPA is leaning towards requiring clearance testing on apartment properties and not in other types of properties because the cost associated with this testing would be excessive. Professionally maintained apartment properties stand the highest chance of developing (as many already have) a dust wipe history to support lead-safe work practices. The one-time renovation event carried out by a contractor in an owner occupied dwelling is more likely to be done with little awareness of how much lead-containing dust will be generated by the specific activity and what steps will be necessary to effectively remove the lead-containing dust.

---

<sup>2</sup>*Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing* at page 178. Report of the Title X Task Force.

According to EPA's *Renovation and Remodeling Study*, "analysis of the data revealed that residential R&R, in general, is associated with an increased risk of elevated blood-level in children." While required clearance testing adds to the cost of a job, NAA/NMHC are unaware of any other technique to assure that no lead dust is left behind.

We do not believe there is any evidence to support the notion of "visual clearance" as used by EPA in the option paper. There is a substantial body of work which EPA has at its disposal through the § 403 rulemaking process which renders the notion of a visible clearance standard a fantasy.

Even if the required work practices mandate that appropriate washing and vacuuming be performed, how will it be possible to determine that these steps have been performed adequately if there is no measurement of the "cleaned" surface? Although it has been suggested that anyone hiring a remodeler will be able to tell if they are washing and vacuuming, there is no way to tell if the vacuum has an operative HEPA filter or the surface has had a sufficient number of passes with a wet cloth to remove the lead-dust.

Along those lines, we wish to note for the record that in 1995, Congress requested that EPA conduct a study to evaluate the efficacy of low cost, rapid detection methods for lead such as the rhodizonate-based instant read tests that are widely available in hardware and paint stores. This request was made in the Appropriation report for FY 1996. When NAA/NMHC checked on the status of this work, we were told that the Agency was not planning to conduct the requested analysis.

HUD's Office of Lead Hazard Control currently has under review a study of the effectiveness of chemical spot testing for the determination of lead-based paint which was performed by the National Institute of Standards and Technology. HUD does not anticipate completion of their review process for at least "several" months. To our knowledge, there is no other pending, ongoing or planned study to document the effectiveness of or for that matter the in effectiveness of chemical spot testing for lead-contaminated dust.

We believe that if such tests were found to be reliable, they would reduce the costs associated with interior clearance testing by (1) eliminating the need to have a testing technician perform the test, (2) eliminating the costs associated with analysis of the test by a certified lab and (3) eliminating the expense associated with delays in a job as a result of waiting for test results.

In occupied units, the impracticality of "closing off" a resident's living area for additional two to three days while waiting for laboratory results is not practical. A multi-year study of HUD grantees conducted by the National Center for Lead-Safe Housing has found

that even under "abatement" conditions where rooms undergoing treatment are sealed off with plastic film and residents are clearly informed about the dangers of entering such spaces, the containment areas are breached by residents.

**6. COMPLIANCE COSTS.** The § 402 rule will have a considerable impact on small businesses that own and manage or perform repair operations on rental property. A survey of maintenance practices among our members indicates that EPA has seriously underestimated the number of workers and events that will be covered by these regulations.

Information which we submitted to EPA regarding the number of events which trigger the requirements of the § 406 (b) regulations are relevant here. NAA/NMHC are collecting information on the number of annual events in pre-1978 multifamily properties which disturb more than 2 square feet of painted surface. In contrast to the EPA numbers cited in the draft document dated 12/2/99, the anecdotal evidence which we have collected finds that using a 15 unit building as the example, the number of renovation events inside apartment units would be many times higher than the 2.35 figure used by EPA to calculate the per event costs. Also, EPA has underestimated the number of events by not including common area events and exterior repair events were included.

Preliminary information from our members indicated that repairs covered by the proposed Rule would represent a range of 0.5 to 4.0 repairs per unit per year. This would add an additional 12.85 to 102.8 million covered events annually to the costs associated with the rule.

In the event EPA requires "clearance" testing following routine maintenance and repair activities to prepare an apartment for a new occupant, the typical "off-line" time of the rental unit will be increased by two to three days while the laboratory is conducting the dust wipe analysis. This will be a significant cost factor to be borne by property owners and as such, EPA must factor this lost of revenue as a cost in its Economic Analysis of the rule.

EPA has misconstrued the data in the National Housing Survey and other sources in preparing its estimates of the cost associated with the proposed regulatory scenarios. These flawed analysis has resulted in cost assumptions do not comport with those published by HUD for similar activities in federally owned and assisted target housing. EPA states that although they may be off in the costs, they believe any increase in the costs will be offset by increased benefits. We request that EPA provide a revised set of cost estimates including the variables it has used from the American Housing Survey and any assumptions that were used to develop to develop estimates of incidence and costs for this rule.

Comments submitted by Patrick Connor, Eileen Lee and Fred Quercetti.

**Attachment A****Excerpt from Department of Housing and Urban Development (24 CFR Part 35) Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance; Final Rule (September 15, 1999)****PROHIBITED TECHNIQUES**

Effective November 15, 1999, the following methods of lead-based paint removal are prohibited at pre-1978 properties which have not been certified lead-based paint free. These work practices for removal of lead-based paint have long been recognized as unsafe and various federal publications including the HUD Guidelines (1995) have specifically cautioned against using these techniques. This regulation, however, specifically prohibits the use of these techniques in properties that participate in federal programs. HUD states that these methods "are known to be dangerous, and/or produce very high levels of lead dust, and are prohibited." They are:

- Open-flame burning or torching;
- Abrasive blasting without high efficiency ("HEPA") vacuum local exhaust;
- Machine sanding or grinding without HEPA vacuum local exhaust;
- Heat guns at temperatures above 1100 °F;
- Dry scraping (wet scraping should be done instead, except near electrical outlets, where use of water could result in electrocution hazards and except for very small areas of deteriorated paint, such as nail holes and hairline cracks); and
- Paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance or hazardous chemical in accordance with regulations of the Consumer Product Safety Commission or the Occupational Safety and Health Administration, such as methylene chloride.

MEMBER



"Professional Painting Pays"

# Paul J. Corey

PAINTING AND DECORATING

769 East Street Dedham, Mass. 02026  
(617) 326-4225 • FAX 320-9062



December 15, 1999

Ms. Jennifer Greenamoyer  
Environmental Protection Agency  
401 M Street, SW  
MC 2136  
Washington, DC 20460

Ms. Greenamoyer:

I hope the following comments will aid the Environmental Protection Agency in its efforts to devise regulations covering lead-based paint activities undertaken by residential remodelers and renovators. The comments track the major components likely to be included in the proposed rule as spelled out in Attachment 3 (Potential Options and Approaches).

**Applicability:**

To lessen confusion, the regulation should cover all pre-1978 housing since most people know that 1978 was the year in which lead was removed from paint.

**Certification of Firms:**

As a small business entity (total annual gross income of less than \$250,000), I think the most cost-effective way to certify my firm would be for me to attend the four-hour training session and then instruct my employees as to how they should implement what I've learned on job sites.

**Training & Certification of Workers:**

Unless the Government both funds and provides the training, small businesses will not train their workers. They will argue, rightly I believe, that the lost time and productivity, coupled with increased overhead costs, will make them less effective in the marketplace.

**Accreditation of Training Providers:**

I think the Government should set the criteria required for training providers, in part because they already do this elsewhere (with asbestos, for example). Trade associations should become involved in this effort by encouraging their members to volunteer to become accredited training providers. If these training programs are trade specific and performed at the local/regional lever, they should hasten the awareness of lead dangers and how they should be addressed in the workplace.

**Work Practices:**

I firmly believe the EPA should take a performance-based approach to work practices since smart contractors are already working "lead smart" and providing clean environments for their clients. A prescriptive approach won't work, especially if it would make contractors less competitive.

**Prohibited Practices:**

My workers use paint removal methods that could be prohibited under this regulation, a fact that troubles me greatly. I ensure that my workers are properly trained in all of the paint removal methods we use so that they can guarantee a safe working environment for themselves and a clean finished product for our clients.

On many of the older homes we work on, heat removal (via open flame burning, a propane-fired plate, or heat gun) is the only way to restore the surface so that it can effectively hold a new paint system. Banning heat removal methods would make it substantially more difficult, if not impossible, to properly prep a surface for new painting.

**Exterior Clearance:**

In my opinion, visual inspection should be sufficient for exterior clearance. Most contractors already work "lead safe", which means they are doing whatever they think is necessary to keep lead dust from entering the home (i.e. placing plastic covering over the windows, using sufficient ground cover to catch chips, bagging chips, vacuuming foundations and the ground area around the home). With that in mind, anything beyond visual inspection becomes unnecessary (and unduly expensive).

**Interior Clearance:**

In addition to being cost prohibitive, wipe testing will prove to be extremely time consuming and cumbersome for small entities. Using the EPA's cost sampling numbers, I have concluded that wipe testing would increase the cost of a typical job by at least \$176. I would note that this figure does not take into account the unknown cost of liability insurance.

Thank you for the opportunity to participate in the panel discussion of December 3, 1999. I hope these comments, as well as those I made during the meeting, will help the EPA to develop a well-reasoned rule.

Sincerely,



Paul J. Corey

Paul J. Corey Painting & Decorating



REGULATORY & LEGAL AFFAIRS DIVISION  
 RHONDA L. DANIELS, DIRECTOR  
 Federal Regulatory Counsel



December 17, 1999

Mr. Thomas Kelly  
 Small Business Advocacy Chair  
 U.S. EPA  
 401 M St. SW  
 Washington, D.C. 20460

Re: Information for SBREFA Panel on Lead Paint  
 Certification and Training Requirements for Renovation  
 and Remodeling

Dear Mr. Kelly:

On behalf of the National Association of Home Builders, I am pleased to submit these comments concerning potential impacts to small businesses resulting from the lead based paint certification and training rule for renovators and remodelers currently under development. NAHB members include single family builders, multifamily owners and managers, and remodelers. NAHB and its Remodelers Council includes over 30,000 members who engage in remodeling activities. NAHB also has an active Multifamily Council, whose members own and manage thousands of units in apartment, condominium, and cooperative buildings. The vast majority of NAHB members qualify as small business entities.

#### Need for the Rule

NAHB recognizes that the Small Business Advocacy Review Panel has specific duties as set forth in the Small Business Regulatory Enforcement Fairness Act (SBREFA). NAHB recognizes that the panel is limited to analyzing potential small entity impacts of the rule and identifying alternatives that minimize such impacts. However, we respectfully disagree with the decision to move forward to require certification and training for renovators performing work on pre-1978 housing based on the inadequate scientific record set forth by EPA.

The number and percentage of children with blood lead levels exceeding the CDC level of concern (10 µg/dl) declined from 88.2% to 8.9% between the periods 1976-1980 and 1986-1991 and from 8.9% to 4.4% between the periods 1986-91 and 1991-1994. Lead was removed from most gasoline and solder on food cans during the 1980's. Little lead poisoning of the 1970's can be attributed to lead paint, since little lead paint abatement was performed during the

Mr. Thomas Kelly  
 December 17, 1999  
 Page Two

the period of decline. The vast majority of past elevated blood lead levels was caused by lead in gasoline and solder on food cans.

The long-term impact exposure at the 10 µg/dl level is moot, considering that nine out of ten children who were 1-5 years old in the 1970's (now 30-40 years old) were "poisoned" at that level. About 16 million children were "poisoned" during 1976-1980 and nearly 50 million between 1970 and 1985. In all probability, lead poisoning has continued to decline since 1994 due to continued reductions of lead in gasoline, drinking water, soil, air and other sources. It is likely that the number of children with blood lead levels exceeding 10 µg/dl is less than half a million, and the number with blood lead levels exceeding 20 µg/dl, for whom CDC recommends medical attention, now is less than 50,000 nationwide. How much of the remaining lead exposure can be attributed to lead paint is unknown, and only a small portion of this exposure can be attributed to renovation.

In the materials provided, SBREFA Outreach Questions and Answers, page 6, the statement "(t)he Center for Disease Control in 1998 reported that there are 890,000 children with EBLs" [emphasis added] is misleading. In 1997 and 1998, CDC reported that during the NHANES survey period 1991-1994, 890,000 children had blood lead levels over 10 µg/dl. Nearly a decade has passed since that survey was begun, and nearly six years since it was completed.

EPA has not tested training on a small scale to determine its effectiveness in reducing lead poisoning. The impact of the distribution of millions of EPA pamphlets to remodeling clients has not been evaluated. This information may be all the training that is needed.

#### Reliance on AHS for Rental Housing is Misplaced

NAHB takes exception to the agency's estimate of the number of renovation events per year in multifamily housing. The agency's estimate of 2.35 interior events per building per year is based on the American Housing survey (1997). However, the American Housing Survey contains no information about renovations in rental units. This data set includes information about renovations only for owner occupied housing. There were also known errors in the American Housing Survey renovation data even for owner occupied units that resulted in the Census Bureau issuing a revised data set on November 29, 1999. Therefore, any remodeling numbers calculated from the American Housing Survey prior to November 29, 1999 are questionable. In order to estimate the number of renovations in rental units, we recommend that the agency refer to the Property Owners and Managers Survey conducted by the Census Bureau in 1995 and 1996.

Mr. Thomas Kelly  
 December 17, 1999  
 Page Three

#### Incomplete Cost Estimate for Remodelor Firms

While the agency has estimated costs associated with employee training, work practices, and clearance testing, we note that costs associated with travel expenses, lodging and record keeping are not factored in the overall cost estimate. The rule will require paperwork to be completed and maintained on each unit. In addition, the cost for lead specific insurance coverage must be included. We have obtained an estimate of \$500 per year as a minimum cost for a commercial general liability policy, pollution exclusion rider, and this could run from \$500 to \$2000.

#### NAHB Supports a Limited Regulatory Approach

With respect to the various options, we believe that a limited regulatory approach will best serve renovators as well as occupants as reduced compliance costs benefit renters in the form of lower housing costs.

We offer the following comments on the various options presented in the agency options paper.

#### Applicability

Only pre-1950 housing should be covered. The 1960 date is an arbitrary outcome of HUD's data collection categories in their National Hazard Survey. It is important to note that only 3% of wall and ceiling area in homes built with drywall contain lead paint. (HUD Comprehensive and Workable Plan, 1990 Report to Congress, page B9). Drywall replaced plaster in home construction during the 1940's. Latex paint replaced most oil paint during the 1950's, and contained much lower levels of lead. Pre-1950 homes have higher concentrations of lead in paint than post-1950. (HUD Plan, Table 3-3, page 3-9). 95% of the white lead used in paint this century was used before 1950. (J. C. Weaver, ASTM Standardization News, April 1989: 34-38.)

#### Certification of Firms

NAHB opposes certification of firms. There is no justification for requiring firm certification if the individual workers are trained.

#### Training and Certification of Firms

NAHB supports training and certification of supervisors only. Supervisors are responsible for directing workers on how the work should be done. Supervisors are present throughout the project anyway so there is no additional cost to have the supervisor on the job site.

Mr. Thomas Kelly  
December 17, 1999  
Page Four

Accreditation of Training Providers

NAHB supports accreditation of all training providers. This will ensure quality control for training programs and ensure consistency around the country.

Work Practice Standards

NAHB supports a performance based approach that would give contractors the flexibility to manage the risk in the way they determine to be most effective from a cost and safety standpoint.

Exterior Clearance

NAHB does not support clearance testing for exterior renovation and remodeling. If the work is done properly and proper cleanup and containment procedures are followed as described in EPA's pamphlet, there is no need for exterior clearance.

Renovation and remodeling contractors should not be required to conduct soil sampling tests. This requirement would place unnecessary burdens on renovators, who are not lead abatement contractors, and would result in unintended consequences for owners of the properties.

Interior Clearance

NAHB does not support interior clearance testing requirements for renovators. There are no health-based standards for surface dust, and no standards for dust wipes. If work is performed properly and appropriate clean-up procedures are followed as described in EPA's pamphlet, there is no need for clearance testing.

We appreciate this opportunity to present these comments.

Sincerely,  
  
Rhonda L. Daniels  
Regulatory Counsel

# Domas & Assoc., Inc.

---

Fine Painting & Decorating

Thursday, December 16, 1999

Ms. Jennifer Greenamoyer  
 U. S. Environmental Protection Agency  
 401 M Street, SW  
 Washington, DC 20460

RE: Proposed Remodeling & Renovation Regulations

Ms. Greenamoyer:

I own and operate a painting and decorating contracting business in Denver, Colorado. We are a legitimate company employing an average of 10 full time employees in the field. Legitimate company being defined as one following State and Federal employment laws regarding payroll deductions, workers compensation insurance, and regular business liability insurance. We are a safety-oriented company and attempt to comply with OSHA regulations via written company safety policy, new hire employee initial safety training and ongoing, company wide safety training. A majority of our business is residential repaint type work. This rule will have a very large impact on my business

In providing small business entity input, I will be attempting to clearly demonstrate what impact the proposed rule making would have on a company of my size. An important distinction to make at the beginning of this letter is the impact to my company will certainly be different than the majority of other painting companies in Denver. Most of the house paint work in Denver, specifically on pre 1978 housing repaint work, is done by smaller companies than mine, typically one to three person businesses. This information was gathered from vendors who sell paint products to these individuals. Why I feel it is important to draw this distinction is because the input I provide and methodology my business would follow is not likely to be repeated by many of these smaller companies. Most of these smaller businesses don't even carry simple business insurance. They do not follow current state and federal laws that affect them. There is no reason to believe that new laws will be followed. These individuals always will have a market place because their sales are low price oriented. If you are intent on your goal of reducing lead poisoning, the rules will have to incorporate systems that will more likely be embraced and be widely used by these smaller businesses.

I have built a business that no longer has to compete as much against the illegitimate businesses (they do not meet the criteria for legitimate business as defined above). My company has one part time administrative staff person who currently performs bookkeeping work. We build an annual business budget that includes employee safety training and safety equipment. When we recognize the need to replace or upgrade field equipment, we plan and budget for it. We are currently examining what we anticipate will affect our operations with the proposed Renovation and Remodel LBP rule.

Painting - Wallcovering Installation & Removal  
 Decorative Painting - Faux Finishes  
 1344 West Cedar Avenue  
 Denver, Colorado 80223-1730  
 Phone (303) 733-7186 Fax (303) 733-2802  
 E-Mail Brandt@greatpaintjob.com

Member - Painting & Decorating Contractors of America

020

When I submit a proposal for painting work to your typical Mr. & Mrs. Smith (American homeowner), as a contractor already following laws affecting my legal operation of a painting business, my bid or proposal is not very competitive. This is my company's twentieth year in business. The buying public and price have always determined my market place. Over the years we have been fortunate to develop a strong repeat customer and referral based business. Most of my customers currently tell me that we're too high priced but they know the work will be done correctly and thus they will receive better value for their purchase.

To the best of my abilities, I have utilized all the printed material I have been supplied with from EPA, information provided during live and teleconference meetings (Dec. '98, Sept. '99, Dec. '99); along with other government publications regarding this topic.

I submit the following comments:

Costs to the small business represented to date are not reality based. The costs to small business associated with implementation of this rule are clearly not understood. The assumption that business won't be impacted because business will simply pass on the costs to their customers is ludicrous. I won't have customers in this segment of my business because the price will be too high. The legitimate business operation like mine will leave this large area of business to the underground. I personally like to work with facts when analyzing change within my business. Mr. Beekman and his staff have addressed several areas of concern, but I believe they have grossly underestimated the costs to small entities because they are missing facts on which to base a cost.

Firm Certification, supervisory training, and the training of employees cannot be done for the costs that have been listed. I know what it costs my firm to train new hires for four hours prior to the new hire ever working hour one in the field. There is an expense for the trainer and training materials, and the new hire wages (current figures are too low). All of those expenses are non-billable, non-recoverable cost of sales.

Work practices are not a part of the cost equation yet. The costs to painting and decorating contractors will be high if work practices are prohibited. I would suggest allowing the free market system to do its job in developing new and better tools that the professional will use. How can a government entity have the knowledge on how to properly prepare a surface?

If the professional is required to use prescribed methods, the cost for work will increase dramatically. I am not to concerned about the containment and cleaning costs because as a contractor providing a higher quality product, containing areas and cleaning areas is already part of our standard project. The use of HEPA vacuums and additional washing are something I can plan on and make a part of better service and product for my customer. The customer can understand this area and will not have much of a problem with these additional costs.

Clearance testing is another area of great concern to me. Pre-project samplings of LBP levels is not even a part of estimated costs and were evidently not a part of any information collected. Why would I start a project and take on the potential of already high lead levels on a property? What if the customer's family already has high blood lead levels? You need to add additional sampling costs and answer how contractors can address the potential for existing high blood lead levels. Pre-project lead level tests and Clearance testing costs need to include costs for labor associated with

Painting - Wallcovering Installation & Removal  
 Decorative Painting - Faux Finishes  
 1344 West Cedar Avenue  
 Denver, Colorado 80223-1730  
 Phone (303) 733-7186 Fax (303) 733-2802  
 E-Mail Brandt@greatpaintjob.com  
 Member - Painting & Decorating Contractors of America

meeting the third party that actually takes the samples. Most homeowners are not home during the day and the painting contractor would need to be responsible for meeting this third party sampler. You could figure one-hour minimum and travel costs. Again, non-recoverable cost of sales.

The definition of 'events' was discussed for the first time on the last conference call. This area needs further study both in costs and definition. All of the small business entities will need to re-examine this area and discuss it further to fulfill what I believe our role to be. How many events are figured into costs? From our discussion the typical interior repaint for my company may have over eight events. Where has this been addressed? The costs would sky rocket.

The cost of business insurance that will cover this type of exposure is not addressed. As a legitimate business owner, if I decide to continue to do business in pre-1978 housing I will have to purchase additional specific hazard insurance that will cover my exposure for LBP, pollution, and environmental concern. This was discussed at some length during the September phone calls. My current business insurance specifically excludes any lead exposures. In researching the specific insurance cost topic with my business insurance broker, I requested a rough idea of what removing those exclusion would cost and was presented with a minimum premium of \$25,000 and a rate of up to \$80 per \$100 of payroll. I didn't ask about insurance that would cover my firm for abatement type of work because of course, we are not removing the hazard as defined by the word abatement, we are merely repainting the hypothetical Mr. & Mrs. Smith's living room, dining room and bedrooms. I was also made aware of an additional insurance cost, that being 'cease of operations' insurance. If I do decide to continue to do work on pre-1978 housing and purchase insurance for the specific exposure (LBP, pollution, environmental coverage), when I want to retire or sell my business, I will have to purchase this 'cease of operations' insurance to protect me from future LBP and pollution lawsuits that could occur well after retiring or having sold my business for previous contract exposure.

I previously wrote that we are currently examining what impacts this proposal would have on our operations. I believe that professionals such as myself are the ones who can help change and reshape the painting industry to achieve the EPA's goals of lowering the potential for lead poisoning in and around our homes. I look forward to examining the proposal to see if we will be able to continue contracting this type of work or if we will have to let it go to the illegitimate businesses.

I appreciate the opportunity to be a part of this process.

Thank you,



Brandt O. Domas  
President

Painting - Wallcovering Installation & Removal  
Decorative Painting - Faux Finishes  
1344 West Cedar Avenue  
Denver, Colorado 80223-1730  
Phone (303) 733-7186 Fax (303) 733-2802  
E-Mail Brandt@greatpaintjob.com

Member - Painting & Decorating Contractors of America



P. O. Box 773 • Ardmore, Pennsylvania 19003-0773  
 (610) 642-1415 • FAX (610) 642-7856

December 17, 1999

Jennifer Greenamoyer  
 Environmental Protection Agency  
 401 M Street. SW  
 MC2136  
 Washington, DC 20460

Re: SBREFA Panel – Written Comments: LBP Regulations on Repainting

Dear Ms. Greenamoyer and the SBREFA Panel,

Please consider the following comments, as you make a report on the impact of regulating the renovation and remodeling industry in the United States.

I first must provide some background on the residential painting industry and some additional information on my company. We are a 35 person residential painting company doing residential repaint work on pre-1978 homes. We operate between 15 and 20 projects daily, with small crews of 1-3 men. We have a staff to assist in dealing with administrative issues. The typical contractor is a 1-3 individual company, and they pay little attention to administrative details. Any increase in "paperwork" will be met with tremendous resistance. These smaller contractors do most of the repainting work that goes on in this country. These same small business entities are having trouble in complying with the 406-discloser rule.

Our company tries to operate in a "lead smart and lead safe" manner. This involves keeping lead dust contained and a thorough clean up when work is finished. We use plastic to cover and seal areas, and we try to keep dust under control.

The market and logistics of residential repainting must be considered when trying to implement any new regulations. Homeowners determine much about how these processes take shape. When a homeowner contracts for painting to be done on their home, the two factors considered are price and quality. Most residential repaint work is performed on a bidding and acceptance process. So when a customer is qualifying a contractor to do the work in their home, we would hope we are dealing with legitimate competitors. This however is not always the case. Many repaint projects can be done by the homeowner themselves, a friend, or a friend of a friend. They are not licensed, insured, pay taxes or operate legitimate businesses. Price is always a consideration.





P. O. Box 773 • Ardmore, Pennsylvania 19003-0773  
 (610) 642-1415 • FAX (610) 642-7856

Many homeowners do pay for quality. Quality involves performing at a high level of professionalism and achieving standards that are widely promoted by the Painting and Decorating Contractors of America (PDCA) and other influences. When a homeowner commits to these levels of quality, professional painting contractors get the job. Quality involves doing good prep work and cleaning up when done. Customers accept nothing less and will not pay if these criteria are not met. Homeowners require good clean work when they are paying a professional painting contractor to perform it. With this as a fundamental element to the equation, I maintain that professional painters do not poison their customers. Residential repainting can be done in a "lead smart / lead safe" manner without the implementation of drastic regulations.

One other basic condition that I must state: the public and the contracting industry do not understand why this issue is coming to light now. 20 years after lead has been removed from paint. Blood lead levels have been going down in the US over the last 20 years.

I mention this so you understand the inertia required getting anybody to comply with what may seem like very unreasonable regulations for basic repainting in older homes.

Please note, I understand that this market place scenario is not the same as is taking place in poverty stricken inner city neighborhoods, where lead poisoning in children is still a big problem.

The EPA has not given us any evidence that painting contractors do poison their customers. At the Dec 8, 1998 stakeholders meeting, a number of studies were presented. The Agency admitted that they were flawed and that there may not have been any lead smart and lead safe methods used. Nevertheless the EPA has continued to use these studies to substantiate implementing an onerous set of regulations. More studies need to be done using "lead smart/ lead safe" methods.

The areas that the EPA proposes to regulate to the residential repaint industry have been discussed at our Dec. 3 meeting and at previous meetings with the Agency. We appreciate this opportunity to make comment. I am not qualified to comment on the number of projects, the number of small business entities affected or other factors that are outside my realm of understanding. I will comment on some of the logistical considerations of painting that I feel I am expert in with respect to some of the components of the EPA's proposed regulations.

#### **Applicability:**

I think that all pre-1978 housing should be considered in this rule. There will be unnecessary confusion if the rule would apply to another cut off year. The year 1978 is widely known as the year that lead was removed from paint.





P. O. Box 773 • Ardmore, Pennsylvania 19003-0773  
 (610) 642-1415 • FAX (610) 642-7856

### **Certification of Firms:**

All firms that do any pre-1978 should be included in this rule. There must be universal acceptance of the rule so as to comply with the development of industry standards.

### **Training and certification of workers:**

Education is the single biggest factor to this issue. Containment and clean up are the major areas to focus on to achieve the desired results (of decreased lead exposure to homeowners while repaint work is going on). Business owners can teach these basic issues while doing other job and safety related training. Training in lead smart practices can be accomplished in much the same manner that OSHA required regulations are met. In the OSHA model the contractor firm is responsible for compliance and training of its employees. Many safety consultant firms as well as the PDCA have sought to fill this niche with seminars and educational programs to assist in compliance. I feel that requiring the owner or supervisors to become certified would be of value. This would underscore the importance of the information involved in working lead safe and lead smart. However requiring all employees to become certified would be very expensive for small contractors. There is a high turn over of employees in the painting industry. To require all employees of a firm to become certified would be over kill.

### **Accreditation of training providers:**

The PDCA would like to become accredited to provide training.

### **Work Practice Standards:**

As I have indicted, many of the work standards are dictated by the market place. These standards are clear: "if you don't do good clean work, you don't get paid." Contractors only thrive when they meet these standards. Customers insist that the areas be cleaned after job completion so this is self-enforcing. Containment and clean up methods can and will improve. Any attempt to dictate these methods will only stifle the good contractors and will be met with disregard by other contractors. Performance based results achieve the best hope of reaching the EPA's goals, as it will incorporate innovation into the market place as new and better equipment and procedures will become the industry standards.

### **Prohibited Practices:**

The prohibitive practices are the most distressing aspect of any potential rule from the EPA. The prohibitive practices recommended have included dry scraping and dry sanding. Dry scraping and dry sanding are the accepted methods used by all painting contractors. Wet methods do not work. Customers want smooth surfaces and wet





P. O. Box 773 • Ardmore, Pennsylvania 19003-0773  
(610) 642-1415 • FAX (610) 642-7856

homeowner is in the house. The room is sealed off from other living areas. Requiring each room to be clearance tested before the occupant returns to the room would involve a separate test for each room and a waiting period for test results to be returned. The average multi-roomed project would involve many tests, at \$300 per test. The logistics involved as well the cost would not be acceptable to homeowners. A waiver would provide no reassurance to the contractor that he would not be responsible for clean up and liability. The additional problem of keeping track of the testing, waivers, and all the follow-up involved would be very costly and smaller contractors would not be able to keep up with the increased level of administrative requirements. The 50mg. per square foot is an arbitrary measurement. A clean job does not require a technician to provide test results. The homeowner knows a clean job when they see it.

In conclusion, a reasonable approach to the lead hazard reduction in renovation and remodeling would involve a public awareness campaign to help good contractors enlighten their customers and training for all contractors who do pre-1978 repaint work. Training would consist of a basic understanding of why a clean, contained work site is the way to work lead smart and lead smart. If methods can be taught that make sense to the contractors, then they will use them. If the public understands that lead dust could be harmful then they would support professional painting contractors that work with lead smart and lead safe practices. This would be a Win/Win.

Thank you for this opportunity to provide comment. Please consider the tremendous impact these proposed regulations would have on the residential repaint industry.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Nolan', written over a light-colored background.

Kevin J. Nolan  
Chairman of Residential Committee,  
Painting and Decorating Contractors of America;  
President, Nolan Painting Inc.

KJN:lr





P. O. Box 773 • Ardmore, Pennsylvania 19003-0773  
 (610) 642-1415 • FAX (610) 642-7856

methods will not provide this. Wet methods would be too cumbersome and dangerous. Moisture can interfere with proper adhesion. The behavior shift required to achieve this would also be insurmountable. The result of prohibiting dry scraping and sanding would be total non-compliance to any regulation. The change would be too great and the benefit of any rule would be lost on this one issue alone.

Burning off of old paint is a procedure that often is requested by customers. While my company does not do much of this type of work as it can be dangerous (fires), some contractors who specialize in restoration do burning. In many cases there is no other practical way to restore old and historic millwork other than burning off the old paint. The EPA also has not proven that this type of work produces any significant lead hazard. Hepa-attached sanding equipment may become a practical solution to using unshielded equipment, but at this point there are still problems with the equipment. The market is responding with manufacturers coming into the arena. At this time our company is working with many different pieces of shrouded and vacuum equipment and we are having limited success. We do use Hepa vacuums, and the prices of these vacuums are coming down. We have cheaper hepa-vacs on every job and we have larger more costly hepa-vacs that we use for sanding and major clean up. We use this as a selling point to our customers as our way of achieving a lead safe project.

#### **Exterior clearance:**

The problems that exterior projects present are much different than interior projects. There is a larger scale and logistical problems of height and landscape. The typical home has more than one story and has many obstacles surrounding it. Trees, shrubbery, decks, lawns, etc. are all around the outside of a house. The use of plastic kills vegetation if it is placed on plants or grass. Ladders are constantly being moved and safety is a consideration. The soil surrounding many of the homes in the US may already contain lead as well as other hazards from pollution and other sources. A reasonable standard involves capturing as much dust and paint chips as possible and cleaning up the rest.

The main area of focus should be in controlling the areas where lead can enter into the home. Sealing off and keeping windows and doors closed, as well as regular cleaning on a daily basis, can control this. Therefore any clearance testing would be irrelevant on exterior jobs.

#### **Interior Clearance:**

Requiring clearance testing at the completion of interior projects is very problematic. Many interior repaint jobs involve more than one room. Rooms are painted while the





P.O. BOX 2015 • 1260 RAILROAD AVE • BLDG 750 • VALLEJO, CA 94592

Ms. Jennifer Greenamoyer  
Environmental Protection Agency  
401 M Street, SW  
MC 2136  
Washington, DC 20460

December 15, 1999

RE: Comments on 11/26/99 Proposed Remodeling & Renovation Regulations

Ms. Greenamoyer:

I present the following comments in an effort to help your agency devise remodeling and renovation regulations that will attain the EPA's stated goals while mitigating the adverse impact on the regulated community. I speak as someone who was born into a construction family and who has been specifically involved with the painting industry since the 1970s.

During my career, I've labored in all aspects of our trade: as an apprentice, journeyman, estimator, contractor and consultant. I am currently employed as the Environmental Health and Safety Director for Jeffco Painting, a West Coast industrial painting concern.

Beginning with its inception in the early 1990s and up to its closure, I served as a primary instructor for the EPA's Western Regional Lead Training Center at UC Davis. In addition to my responsibilities at Jeffco, I continue to serve as a primary instructor for lead programs at both UC Berkeley and San Francisco City College. I also serve as the training director for the Golden Gate Chapter of the Associated Builders and Contractors (ABC) painter's apprenticeship program.

I am certified by the California Department of Health Services (DHS) as a Lead-Related Construction Risk Assessor and Inspector, Project Designer and Project Monitor.

My comments will be consistent with your Attachment 3: Potential Options and Approaches (dated November 26, 1999). They will be submitted to you as items 1-8 below, which correspond to their order in the attachment.

# JEFFCO

## 1. Applicability

I believe the regulation should cover all pre-1978 housing. While I agree with most of the statements made in favor of this option, I would add the following: Most R&R contractors' insurance packages fail to cover "pollution events." This is primarily because contractors don't think they need it as they assume that their liability policies will cover this exposure. Also, suitably-priced packages are rare at this time, as the insurance industry isn't sure what to cover. By providing a consistent regulatory date (i.e. pre-1978 housing), I believe the insurance industry will be able to cover these exposures.

## 2. Firm Certification

Again, for purposes of insurability and consistency, I think the regulation should require firms performing this work to be certified. However, I would argue that a firm should only be required to maintain *one* trained and certified individual on its staff. This individual would, of course, be charged with training and directing subordinates.

## 3. Training and Certification of Individuals

I would argue that the regulation should require training and certification for supervisors only. Most professional painting firms are small operations with annual gross sales of less than \$250,000. The average project is priced-out at \$3,500. The next largest group contains firms with sales of \$500,000 and average projects in the range of \$7,500. While these entities can afford to send the owner/manager to a training session, it becomes cost prohibitive if they are required to send several workers as well. I would also note that pertinent risk management decisions are generally made by one person as opposed to the entire work force. If that one person attended the training session, then relevant risk issues could still be appropriately addressed on the job site.

## 4. Accreditation of Training Providers

I would submit that Option 1 (which requires accreditation of all training providers) is appropriate. The information provided during the training session must be presented in a well-organized manner to be effective. Additionally, there must be some accountability and record-keeping for certification purposes. For these and other practical reasons, the training should be administered by an accredited training provider.

# JEFFCO

## 5 and 6. Work Practice Standards and Prohibited Practices

Based on my experience and research, I would submit that the current prescriptive HUD work practice standards do not consider reliability, effectiveness and safety for the entire regulated community. Instead, these standards are designed to ensure that low-skilled workers can accomplish specific tasks without exceeding the permissible lead-exposure level as defined by OSHA. Statements supporting my interpretation of the prescriptive standards can be found throughout the HUD Demonstration project documentation and in subsequent documents.

While protecting the health and safety of low-skilled workers is a worthy goal, banning certain work practices for everyone (including professional painting contractors) is not cost-effective.

The EPA should recognize that banning certain work practices will dramatically increase project costs for home owners without providing a corresponding increase in safety.

To elaborate, current prohibitions include open flame burning; the use of methylene chloride paint strippers; dry scraping and sanding; and abrasive blasting without the use of a HEPA vacuum attachment. Yet, most professional painting contractors can use these methods safely because they have workers who are properly trained to do so. As a result, they are able to complete projects in a safe and *cost effective manner*.

Prescriptive work practices will not work unless the EPA is prepared to underwrite the increased costs of performing this work. For example, a residential property owner wishing to refurbish their exterior stucco would typically have an abrasive blasting company remove the outer layers of the existing stucco that has been painted with lead-based paint. To accomplish this using traditional methods while containing all dust and debris, the contractor could normally cover 1,000 to 1,500 square feet per day, per blaster. Containment costs for this project would be in the range of 10 percent. To accomplish this same task using a HEPA-attached vacuum blasting rig would drop the production rate to 250 to 500 square feet per day, per blaster. Again, containment costs would be in the range of 10 percent. As you can see, the latter alternative would greatly reduce the work rate on a project, and thus drive up the costs to the property owner.

In my opinion, the EPA can best achieve its stated goal of reducing instances of lead poisoning by focusing on containment and clean-up. This means educating contractors on the need to effectively contain a work area and then, at the conclusion of a project, to clean up that area using HEPA vacuums and mops.

# JEFFCO

By educating contractors and, indirectly, the general public, you will go a long way towards creating lead safe projects.

I cannot stress enough that work standards need to be *performance based*. No work practices should be banned since doing so is not a cost-effective way to reduce instances of lead poisoning.

## 7. Exterior Clearance

The best option, in my mind, is to employ a visible standard. This would allow the two parties to the project to use their inherent skills to judge the work. If a soil or wipe sampling method is used, a risk assessor/inspector must be employed. In my experience, these risk assessors are often inexperienced with construction displaying a great deal of ignorance with regards to the task at hand. Their involvement would almost certainly increase project costs without increasing project safety.

## 8. Interior Clearance

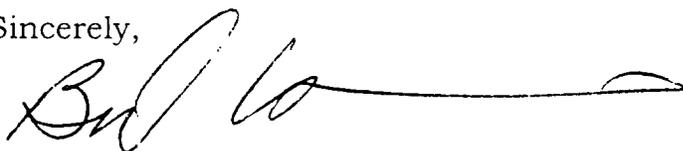
In my opinion, a visible standard should be used. Recent studies indicate that contractors can achieve acceptable cleanup levels if they follow a HEPA vacuum and wet mop protocol.

I do think there may be some value in offering owners the option of a wipe sample. The only problem with this is that wipe sampling doesn't account for pre-existing conditions (e.g. lead painted flooring; dusty and dirty areas that are not part of the contractor's scope of work, etc.).

In conclusion, I believe and have experienced the fact (in the industrial sector) that the issue of lead-based paint activities can be effectively and appropriately addressed through training. By focusing on educating R&R contractors how to contain, cleanup and stage a project so that inhabitants aren't exposed to lead, you will see a corresponding reduction in instances of lead poisoning; while at the same time, not surreptitiously increasing liabilities and consequent costs to both those doing the work and consumers.

Thank you for the opportunity to participate in this process. I look forward to seeing your final proposal.

Sincerely,



Burt Olhiser, CPE  
Environmental Health & Safety Director  
Jeffco Painting & Coating, Inc

Comments on Proposed Rulemaking  
EPA Lead-based Paint; Certification and Training;  
Renovation and Remodeling Requirements

SBREFA SER  
Kevin J. Sheehan  
Renovation & Restoration  
1 Sunset Dr.  
Dover, NH 03820

To: Jennifer Greenamoyer  
USEPA Office of Policy  
Washington, D.C. 20460

Thank you for the opportunity to take part in this rulemaking process. As a renovator and parent who has had first hand experience with the emotional and financial devastation that accompanies a renovation project resulting in the poisoning of a child and the contamination of a home, I naturally have some thoughts on the subject from both sides of the fence.

Since my own experience caused by improper lead in renovation techniques and methods, I have believed that education can prevent lead poisoning. Consequently, I have been an advocate for lead in renovation training. I have taught applicable parts of the EPA Model Lead Abatement Worker course to renovation professionals so that they may have the necessary skills for evaluating and controlling a renovation or repainting project involving lead paint.

I have also conducted lead inspections at the homes of lead poisoned children and on-site interviews with R&R contractors to the point where I believe the education of tradespeople regarding safe work methods and the altering of common, standard work practices is essential if lead poisoning by renovation is to be eliminated. I am also convinced that some method of enforcement needs to be available if the requisite behavior does not accompany the knowledge.

To this end, I offer my comments.

### 1. Applicability

This rule should apply to all pre-1978 housing. This is consistent with other requirements and guidance and should remain so. Where work is to be performed in localities where lead paint was banned earlier than 1978, owners can institute inspection procedures where it would be more economically feasible than assuming that all surfaces were lead-based paint. For \$100-\$150, a local inspector can test the surfaces involved in the scope of work. In cases where a negative determination is documented, this will more than pay for itself by eliminating containment and clearance costs.

### Exemption 1: Minor repair or maintenance

The de minimis level consideration is valid provided that a clear distinction can be made between minor repair or maintenance and a point at which 2 sq. ft. per component adds up to, or is a component of, a renovation activity.

This is not so important an issue for small-scale projects of an R&R contractor as it is for the compliance of certain specialty trades. Training would still be necessary for the R&R contractor to make this distinction on a job by job basis. Further, we want to encourage the necessity and ability to evaluate each circumstance and apply the appropriate precautions.

In the case of some specialty trade contractors (e.g. electricians, plumbers, CATV installers), where the bulk of work may rarely disturb more than 2 sq. ft. of painted surfaces, the full applicability of this rule is overly burdensome. Some degree of education and awareness is still warranted to the extent that complete ignorance of potential hazards is eliminated and a concern for minimal disturbance, containment and cleanup is created.

Where the disturbance by specialty trades is not de minimis, it would likely be as a subcontractor to a general contractor, project manager or owner agent who would need to assure that appropriate precautions are accounted for in the scope of work and performed by a qualified firm.

Regarding two sq. ft. per component or room/area. Per component may be more useful for consistency, however, per room/area is obviously more protective. Further, there is no clear distinction as to when the compilation of components achieves the status of being an R&R project. Given the inconsistent lists of examples of components (i.e. Are door and door trim two components or one? Is exterior siding a single component? Are stair treads and risers all separate components?), as well as the sheer number of possible separate components that can contribute to a project, how can several multiples of two sq. ft. per room remain a de minimis project?

Consistency with HUD's 1995 Guidelines will be obsolete come September 15, 2000 when the "Final New HUD regulation" (24 CFR Part 35, et al.) becomes effective. This regulation calls for "safe work practices" when the area of paint being disturbed is greater than:

- 20 square feet on exterior surfaces; or
- 2 square feet in an interior room; or
- 10% of a building component with a small surface area.

If we consider the language of the EPA publication "The Lead-Based Paint Pre-Renovation Rule" (EPA-747-B-99-004 Sept 99), page 1 states "**Renovation** includes most repair, remodeling and maintenance activities that disturb painted surfaces." Page 2 makes a distinction for exclusion with the terms "**Minor repairs and maintenance** that disturb two square feet or less of *paint per component*" (italics added). These seemingly separate terms are confused on page 3 where it seems that for the purposes of exclusion, "**minor repairs or maintenance** that disturbs 2 square feet or less of *painted surfaces*" (italics added) are considered **renovations**. These terms need to represent two distinct scopes of work. A job needs to be one or the other, not be one yet qualify for the other. How many square feet of paint are disturbed replacing a window? Is this **Renovation** or **Minor repairs and maintenance**? How about 10 windows? A door including the trim? 10 doors? Repairing and repainting a door? A wall? A room? Every room?

Obviously, clearer language is necessary for hinging such considerations as training, containment and clearance on this point, as well as for making this rule protective. I believe HUD's definitions above are clear, distinct and protective.

#### Exemption 2: Emergency Renovation Projects.

I agree with the exemption as worded so that the "source of emergency" repair only is exempt and any further work would need to comply with this rule.

#### 2. Certification of Firms

I agree with Option 1 - Certification of all renovation, remodeling and repainting firms working in pre-1978 housing.

Regarding Option 3. Any training similar to OSHA standards will NOT have any effect on this industry. I have been in this industry for more than 15 years with different employers and have never had OSHA requirements conveyed to me by an employer. In fact, the only exposure to OSHA standards has been in lead abatement training classes.

#### 3. Training and Certification of Individuals

I agree with Option 2 Training of supervisors only as long as there is also a requirement that a supervisor be onsite. If a worker is performing unsupervised work or only one worker is necessary for the job, that worker needs to have supervisor training by this rule. I don't think certification is necessary provided there is proof of attending a required training from an accredited training provider with a prescribed curriculum.

#### 4. Accreditation of Training Providers

Option 1, Requiring accreditation of all R&R training providers is the only way to assure delivery of a prescribed curriculum to account for and achieve any standard of training.

Regarding Option 2, any training using the OSHA training approach will NOT "trickle down" to where it is most needed. OSHA's own Special Emphasis Enforcement Program (SEEP) for 1926.62 listed lack of training and hazard information as the number one violation.

#### 5. Work Practice Standards

I view the examples of performance based standards as acceptable minimum standards to address and accommodate a broad range of jobs. The language is vague enough with its use of terms like "or other appropriate means," "sufficiently isolated" and "sufficiently covered" to allow flexibility on the contractor's part, while still holding to minimum criteria for evaluation purposes.

Regarding Exterior renovations: The wording needs to remove "to an adjacent property." Generally, it would be advisable to "confine any generated lead dust or debris to the work area."

Period. If a second sentence is necessary to illustrate migration, perhaps a better wording would be "to any adjacent, uncontained area."

All six bullet points should remain. I think they amount to minimum protective standards that introduce some degree of containment that can be evaluated at clearance or project close-out/turnover. Clean-up including HEPA vac and wet wash are also among the minimum standards.

Also, I think they do "provide owners with clear requirements with which to evaluate performance." They provide an outline of basic, minimum precautions. Either the owner or contractor can insist on higher level precautionary measures (e.g. The owners interpretation of whether or not his lawn or floor is "sufficiently covered" or dust migration is confined.).

## 6. Prohibited Practices

I agree with the other SERs concerning prohibited practices. I see no reason to prohibit work practices as long as contractors can meet containment, exposure and clearance requirements. If they feel they need to burn paint to remove it most efficiently and effectively, let them be equally concerned for the most efficient and effective containment, worker protection, occupant protection and clean-up of dust and debris.

Machine grinding and sanding should require HEPA capture and exhaust control. There is no reason not to advance the industry standards for tools and equipment. This could be both a minimum protective requirement and state of the art compliance at the same time.

Abrasive blasting and sandblasting would also require source capture and/or reclamation or more extensive containment and clean-up measures.

Dry scraping and heat guns would also necessitate more extensive containment and clean-up requirements, interior and exterior.

Not previously mentioned is chemical stripping. Judging from where chemical stripping falls in some of the SBREFA literature, this seems to be regarded as a low dust generating task, and therefore contains a low risk of creating a hazard. This couldn't be further from the truth. During HUD's FHA Demonstration Project, sites where the chosen abatement method was chemical stripping failed clearance most.

Machine and hand sanding of surfaces following chemical stripping is also high lead-dust generating.

## 7. Exterior Clearance

I think some degree of clearance is essential for establishing and maintaining minimum protective standards.

Visual inspection is the minimum protective standard. However, who will perform this visual evaluation is more to the question.

The private inspection industry spawned by the abatement industry has maintained its growth just shy of sufficient to meet the demand. A new demand does not also provide for a sufficient infusion of capable inspectors. The time necessary for training of enough new inspectors to serve the entire R&R industry would lag the R&R industry into non-compliance.

Regarding wipe-sampling technician: I don't think this discipline will have the proliferation that is expected. Clearance testing is perhaps where the inspector's risk is highest. I don't expect that a large number of new firms will develop to assume the highest risk. Perhaps existing firms with some years of inspection and clearance experience and errors and omissions insurance would expand to accommodate apprentice inspectors. Ideally, they would need to sign for the apprentice and consequently assume liability for the apprentice. This would also be a slow growth industry.

Regarding soil testing: I am not aware of a large amount of data for correlating exterior presence of lead-based paint and lead in soil levels exceeding EPA's hazard standards. For example: If a house has exterior lead paint (intact, defective or otherwise) to what extent can the presence of soil hazards be assumed? I would think they would go hand in hand. Is there a 95% confidence level that houses with exterior lead paint have soil that exceeds 400ppm, 2000ppm, 5000ppm. What percentage of houses do exceed these levels? Perhaps the EPA knows this information. All this is to say that soil testing is not going to tell much about a recently completed scope of work. Sampling error alone can have a range too large to be of any practical value under these conditions.

Also, I see no reason to be more protective than the abatement standard, which does not require soil testing.

#### 8. Interior Clearance

Require dust testing at project completion. An option for single family owner occupant to decline a dust test would not protect them from themselves. This rule is intended to protect contractors and occupants in spite of themselves. Clean-up requirements including HEPA vac and wet wash.

Clearance responsibility on multi-trade jobs would have to be specified by the project manager, general contractor or owner. All contractors would be responsible for minimum containment and clean-up during their assigned tasks. One contractor would be responsible for final clean-up and clearance. This may make it necessary for this contractor to be on the job at the beginning to assure adequate set-up and containment. In some cases it may be practical and allowable for this contractor to provide the lead supervisor for the entire job.

Thank you.

Sincerely,

Kevin J. Sheehan