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Lead; Identification of Dangerous Levels of Lead; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 745

[OPPTS–62156H; FRL–6763–5]

RIN 2070–AC63

Lead; Identification of Dangerous Levels of Lead

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is issuing a final regulation under section 403 of the Toxic Substances Control Act (TSCA), as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as ''Title X (ten),'' to establish standards for lead-based paint hazards in most pre-1978 housing and child-occupied facilities. This regulation supports the implementation of regulations already promulgated, and others under development, which deal with worker training and certification, lead hazard disclosure in real estate transactions, requirements for lead cleanup under State authorities, lead hazard evaluation and control in Federally-owned housing prior to sale and housing receiving Federal assistance, and U.S. Department of Housing and Urban Development (HUD) grants to local jurisdictions to perform lead hazard control. In addition, today's action also establishes, under authority of TSCA section 402, residential lead dust cleanup levels and amendments to dust and soil sampling requirements and, under authority of TSCA section 404, amendments to State program authorization requirements. By supporting implementation of the major provisions of Title X and by providing guidance to all owners and occupants of pre-1978 housing and child-occupied facilities, this regulation will help to prevent lead poisoning in children under the age of 6.

DATES: This final rule is effective on March 6, 2001. This rule shall be promulgated for purposes of judicial review at 1 p.m. eastern daylight time on February 5, 2001.

FOR FURTHER INFORMATION CONTACT: *For general information contact*: Barbara Cunningham, Director, Office of Program Management and Evaluation, Office of Pollution Prevention and Toxics (7401), Environmental Protection Agency, 1200 Pennsylvania Ave., NW, Washington, DC 20460; telephone number: 202–554–1404; e-mail address: TSCA-Hotline@epa.gov.

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SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this Action Apply to Me?

You may be affected by this action if you must comply with other Title X regulations that are affected by today's action. The following table identifies potentially affected categories and entities:

Category	Examples of Entities	NAICS or SIC codes	Effect of Regulation
Lead abatement professionals	Workers, supervisors, inspectors, risk assessors, and project designers engaged in lead-based paint activities.	562910	Provides standards that risk assessors would use to identify hazards and evaluate clearance tests; helps determine when certified professionals would need to be employed to perform lead cleanup
Training providers	Firms providing training services in lead-based paint activities	611519	Provides standards that training providers would have to teach in their courses
Federal agencies that own residential property		92511, 92811	Standards identify hazards that Federal agencies or purchasers of Federal property would have to abate in pre 1960 housing prior to sale, under Title X, section 1013.
Property owners that receive assistance through Federal housing programs	State and city public housing authorities, owners of multifamily rental properties that receive project-based assistance, owners of rental properties that lease units under HUD's tenant-based assistance program	53110, 531311	Standards identify hazards that property owners would have to abate or reduce as specified by regulations issued by HUD under authority of Title X, section 1012
Property owners	Owner occupants, rental property owners, public housing authorities, Federal agencies	531110, 531311	Standards identify hazards that, when known, would have to be disclosed under EPA/HUD joint regulations promulgated under Title X, section 1018

This listing is not intended to be exhaustive, but rather provides a guide for entities likely to be affected by this action. Other types of entities not listed in the table in this unit could also be affected. To determine whether you or your business is affected by this action, you should carefully examine the applicability provisions in relevant regulations. If you have any questions regarding the applicability of this action to a particular entity, consult the technical person listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. How Can I Get Additional Information, Including Copies of this Document or Other Related Documents?

1. *Electronically*. You may obtain electronic copies of this document, and certain other related documents that might be available electronically, by

going directly to the Internet Home Page for this regulation at http://www.epa.gov/lead/leadhaz.htm and selecting the desired document. You can also go directly to the **Federal Register** listings at http://www.epa.gov/fedrgstr/ to obtain a copy of this final rule.

2. *In person.* The Agency has established an official record for this action under docket control number OPPTS–62156. The official record consists of the documents specifically referenced in this action, any public comments received during the comment period, and other information related to this action. This official record includes the documents that are physically located in the docket, as well as the documents that are referenced in those documents. The public version of the official docket, which includes printed, paper versions of any electronic comments submitted during the comment period, is available for inspection in the TSCA Nonconfidential Information Center, North East Rm. B–607, Waterside Mall, 401 M St., SW., Washington, DC. The Center is open from noon to 4 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Center is (202) 260–7099.

II. Overview

A. Introduction

The Title X term ''lead-based paint hazard'' is intended to identify lead-based paint and all residential lead-containing dusts and soils regardless of the source of the lead, which, due to their condition and location, would result in adverse human health effects. One of the underlying principles of Title X is to move the focus of public and private sector decision makers away from the mere presence of lead-based paint, to the presence of lead-based paint hazards, for which more substantive action should be undertaken to control exposures, especially to young children. This regulation establishes hazard standards for residential lead-based paint, and residential dust and soil lead. The hazard standards for these three media, collectively, are statutorily defined as lead-based paint hazards.

B. Summary of Statutory Authority

The Residential Lead-Based Paint Hazard Reduction Act of 1992 was enacted as Title X of the Housing and Community Development Act of 1992. Title X establishes a comprehensive Federal program for reducing the risks from lead-based paint and certain lead hazards. The Title X program primarily gives authority to HUD and EPA, but affects a number of other Federal agencies. Among other things, Title X amended TSCA by adding TSCA Title IV, which specifically gives regulatory authority to EPA to cover, among other things, training of workers who deal with lead-based paint hazard abatement, the appropriate form of State and Tribal lead programs, and the identification of dangerous levels of lead. Title IV includes section 403. EPA is promulgating the standards for lead-based paint hazards under the authority of TSCA section 403, 15 U.S.C. 2683.

Section 403 requires EPA to promulgate regulations that ''identify . . . lead-based paint hazards, lead-contaminated dust, and lead-contaminated soil'' for purposes of the entire Title X. Lead-based paint hazards, under TSCA section 401 (15 U.S.C. 2681), are defined as conditions of lead-based paint and lead-contaminated dust and soil that ''would result'' in adverse human health effects (15 U.S.C. 2681(10)). Lead-based paint is defined by statute as paint with lead levels equal to or exceeding 1.0 milligrams per square centimeter (mg/cm^2) or 0.5% by weight (see section 302(c) of the Lead-Poisoning Prevention Act (42 U.S.C. 4822(c)) and TSCA section 401(9) (15 U.S.C. 2681(9)). TSCA section 401 defines lead-contaminated dust as ''surface dust in residential dwellings'' that contains lead in excess of levels determined ''to pose a threat of adverse health effects'' (15 U.S. C. 2681(11)). TSCA section 401 defines lead-contaminated soil as ''bare soil on residential real property that contains lead at or in excess of levels determined to be hazardous to human health'' (15 U.S.C. 2681(12)).

EPA is also promulgating amendments to the regulations for lead-based paint activities under the authority of TSCA section 402 (15 U.S.C. 2682) and to the State and Tribal program authorization requirements under authority of TSCA section 404 (15 U.S.C. 2684). These changes are needed to ensure consistency among the various regulations covering lead risks under TSCA. Section 402 requires EPA to promulgate regulations establishing training and certification requirements for individuals and firms engaged in lead-based paint activities. Lead-based paint activities, in the case of target housing and child-occupied facilities, include risk assessment, inspection and abatement. See TSCA section 402(b)(1); 15 USC 2682(b)(1). To clarify this definition, EPA notes that lead-based paint activities do not include interim controls. These regulations ''shall contain standards for performing lead-based paint activities, taking into account reliability, effectiveness, and safety'' (15 U.S.C. 2682(a)(1)). Section 404 requires States and Tribes seeking to administer and enforce standards, regulations, or other requirements under section 402, 406, or both to seek authorization from EPA.

C. Guiding Principles

Reducing exposure to lead has been an important issue for EPA for more than 2 decades. Young children are especially vulnerable to the toxic effects of lead because their nervous systems are still developing and they absorb more of the lead to which they are exposed. Many of the health effects associated with lead are thought to be irreversible. Moreover, the effects at lower levels of exposure are often asymptomatic. In light of the impacts on children and the nature of the health effects, EPA's goal is to eliminate exposure to harmful levels of lead. This goal has informed Agency actions such as the decision to remove lead as an additive from gasoline as discussed in the preamble to the proposed rule (63 FR at 30305).

First and foremost, the Agency faces the difficulty of determining the level at which to set the standards given the uncertainties in information on cause and effect--what environmental levels in which specific medium may actually cause particular blood lead levels that are associated with adverse health effects. The Agency has tools, which are only generally consistent, that show that certain increases in environmental lead levels are associated with certain increases in blood lead levels. Given the range of uncertainty shown in its analysis supporting the establishment of a hazard level under this rule, EPA has developed a technical analysis that considers hazard standards for dust and soil at the lowest levels at which the analysis shows that across-the-board abatement on a national level could be justified. EPA recognizes, however that for any levels of lead in dust or soil judgment must be exercised as to how to treat the medium, and interim controls as well as abatement could be effective. In addition, EPA recommends that organizations and individuals consider some form of interim control in certain residential areas even where soil lead levels are below the hazard standard if there is a concern that children under 6 might spend substantial time in such areas, or there is potential for that soil to contribute to hazardous lead levels in play areas or dwellings. While the risks from lead at these lower levels are less than the hazard level, EPA believes that public health will be further protected if

owners and occupants of residential properties are encouraged to take actions to reduce the potential for lead exposure.

In performing its analyses for this rule, the Agency could not quantitatively compare interim control strategies with abatement strategies because there are only limited data available on the effectiveness of interim controls over extended periods of time, and those data which are available are not suitable for quantitative comparisons with abatements. In comparing interim control strategies with abatement strategies, one must make a number of assumptions concerning the costs of administrative management, and frequency of monitoring and renewal over the planning horizon. For the 50–year planning horizon which the Agency used in its dust and soil analyses, one would have to compare the time stream of interim control expenses, for as long as such expenses are necessary, and weigh the possible differences in potential blood-lead reductions, to make a fair comparison of abatement and interim control strategies.

Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. EPA received comments on this issue during the public comment process. EPA wishes to encourage the continuing evaluation of such efforts because resources to deal with hazardous lead levels are often limited, and strategies which achieve comparable risk reduction, but at much reduced cost, have the potential to protect more children by allocating the limited resources more effectively. EPA believes that public and private organizations should evaluate both interim control and abatement strategies in determining the most effective course of action when dealing with dust and soil hazards.

In addition, EPA recommends that organizations and individuals consider some form of interim control response action in certain areas even where soil lead levels are below the hazard standard. This would apply if there is a concern that children under the age of 6 spend substantial time in such areas, or there is potential for that soil to contribute to hazardous lead levels in play areas or dwellings. While the risks from lead at these lower levels are less than at the hazard level, EPA believes that public health will be further protected if owners and occupants of residential properties are aware of such contamination and are encouraged to take actions to reduce the potential for lead exposures.

For determining a paint lead hazard EPA faced a data problem different from that faced with respect to dust and soil hazards. For dust and soil, EPA had substantial raw data on environmental levels and blood lead levels, even though it faced substantial uncertainty in correlating the levels. For lead-based paint, as discussed later in this preamble, the Agency had no data by which it could select a threshold below which the paint would not be a hazard. EPA, therefore, could not apply the same analysis for the paint hazard determination as it did for the dust and soil hazard determinations. Comments indicated that even very tiny amounts of deteriorated lead-based paint are sufficient in certain circumstances to result in adverse health effects. Accordingly, EPA has generally designated any amount of deteriorated paint as a lead-based paint lead hazard. Nevertheless, as with dust and soil hazards, EPA would not recommend full scale abatement be undertaken for all paint lead hazards. Instead, the Agency wishes the public to be aware that any deteriorated lead-based paint presents enough of a risk that it should be stabilized and carefully monitored if it is not abated.

Controlling exposure to lead in the residential environment presents EPA with challenges that, in important respects, are different from and often more complex than those the Agency deals with in other regulatory contexts. Among the challenges of this regulation is that it requires the Agency to address exposure from the past use of products that contained lead rather than current products and/or processes that introduce lead into the environment. Assuming that there are safe and available substitutes, the government can eliminate lead from an existing product if the risk warrants such removal (e.g., gasoline, solder for water pipes and food cans). Removing lead that is already in the environment is far more difficult. It would have been better that lead never found its way into paint that exists today in approximately 64 million homes. However, since it is so pervasive, EPA is faced with a number of dilemmas. First, the number of properties that have some form of lead is enormous. However, the number of buildings with lead paint an dust that present a hazard is, relatively, much lower. The Agency must therefore distinguish which of these lead conditions need to be controlled. Because there is a great deal of variability among properties containing lead paint, our ability to identify which properties present risks is limited. Moreover, the exposure risk to individuals, even if there were not such a large number of affected properties, can be compounded by child-specific factors (e.g., hand-to-mouth behavior, pica, nutrition, hygiene).

In addition, the success of the program will largely rely upon the voluntary participation of States and Tribes, as well as counties and cities, to implement the program and upon property owners to follow the standards and EPA's recommendations. If EPA were to set unreasonable standards (e.g., standards that would recommend removal of all lead from paint, dust, and soil), States and Tribes may choose to opt out of the Title X lead program and property owners may choose to ignore EPA's advice, believing it lacks credibility and practical value. Consequently, EPA needed to develop standards that would protect children without wasting resources by chasing risks of negligible importance and that would be accepted as reasonable by States, Tribes, local governments, and property owners.

Three other considerations also merit the public's attention. First, as noted, the standards are designed to focus resources on the worst problems. If property owners are able to address less pressing problems (e.g., deteriorated paint below the minimum area threshold), EPA encourages them to take action. EPA also encourages States, Tribes, and local governments to adopt more stringent standards if local circumstances warrant such action.

Second, the standards alone cannot solve the lead problem. They are part of a broader program designed to educate the public and raise public awareness, empower and protect consumers, and provide helpful technical information that professionals can use to identify and control lead hazards. EPA has developed and implemented an active public education and outreach program consisting of a toll-free hotline (1–800–424–LEAD) co-sponsored with HUD and U.S. Centers for Disease Control and Prevention (CDCP), public service announcements, poster campaigns, distribution of a parent's guide through grocery stores, slides in movie theaters, and an outreach campaign with the National Parent Teachers Association, the National Association of Child Care Providers, and public libraries.

Consumer empowerment and protection efforts include the hazard disclosure regulations jointly issued with HUD training and certification

standards for individuals and firms engaged in lead-based paint activities, and the pre-renovation education rule that requires renovation and remodeling contractors to provide the EPA pamphlet ''Protect Your Family from Lead in Your Home'' to occupants prior to the start of renovation and remodeling projects. In addition, under section 402 of TSCA, EPA is currently developing training and certification requirements for renovation and remodeling contractors whose activities may create lead hazards.

EPA and other Federal agencies continue to conduct field studies to identify and evaluate lower cost products and technologies for evaluating and controlling lead-based paint hazards. The findings of these studies are distributed to professionals through our lead hotline, EPA's website (www.epa.gov/lead) and at other agencies' websites, and through on-going contact with trade and professional associations. The standards, combined with these other efforts, provide a comprehensive program designed to reduce and eventually help eliminate lead in residential paint, dust, and soil as a cause of childhood lead poisoning.

Third, these standards are based on the best science available to the Agency. EPA recognizes, however, that the science is constantly developing and with it our understanding of the relationship between lead in the environment and human exposure and the relationship between exposure and health impacts. If new data become available (e.g., empirical data showing that very small amounts of deteriorated paint pose a serious health risk or data showing that hazard control activities are more effective at reducing long-term dust-lead levels than assumed by EPA), the Agency will consider changing the standards to reflect these data. If the data indicate that the standards should be changed and they meet EPA's quality criteria, the Agency will consider publishing the data for public review and comment and amending today's regulation.

D. Regulatory Approach

1. *Uniform national standards.* EPA is issuing uniform national standards in this rule. The rationale for adopting uniform national standards is found on pages 63 FR 30307 to 30308 of the preamble to the proposed rule. EPA summarizes this reasoning in the following paragraphs.

EPA stated that the relationship between environmental lead levels (from paint, dust, and soil) and their effects on the health of exposed children, which forms the basis for this rule, is complex, and is dependent upon numerous site-specific and child-specific factors. Where more site-specific factors can be considered on a smaller (residence or community) scale, estimates of the effects of environmental levels on blood lead can be more accurate. The data needed, however, are not available for communities nationwide. In contrast, national data on lead in paint, dust, and soil are currently available. Even if data were available, the residence or community scale standards would still not account for variability in exposure influenced by child-specific factors (e.g., hand-to-mouth behavior, hygiene, and nutrition). Detailed evaluations that considered the specifics of individual communities would generally require information for each residence to evaluate the impact of environmental lead on children.

In addition, uniform national standards provide a fixed basis of comparison for all homes. National standards can be used to compare properties and establish priorities. This would be extremely difficult to accomplish if there were the numerous standards specific to individual communities.

EPA also took into account that certain segments of the population have a higher incidence of elevated blood-lead levels (e.g., minority and low-income children). Because estimates of the relationship between environmental lead levels and children's health effects are not sufficiently refined to distinguish relationships for particular subsets of the general population of children, EPA is choosing to emphasize program implementation (e.g., training, education, and environmental justice grants), which the Agency considers a more effective and simpler approach to address vulnerable communities rather than setting community-specific standards. EPA preferred to establish a simple, set of standards that could easily be adopted by States, allowing them to tailor the standards, should they so choose. This allows States greater flexibility to establish and implement their programs while a national, baseline level of protection to children is maintained.

2. *Media-specific standards.* A second basic issue that shaped EPA's standard-setting approach involves the fact that a child's total lead exposure is the sum of contributions from numerous sources, including paint, dust, soil, and others. Specifically, EPA had to decide whether to set separate, independent standards for paint, dust, and soil or to integrate the standards.

Under the first option, EPA would establish a fixed standard for each medium without considering the varying conditions in the other media. For example, the soil standard would remain constant, regardless of whether dust lead levels were high or low. The chief advantage of this option is that the standards are simple to understand and use.

A potential disadvantage of this approach is that a standard could be established for a particular medium that does not consider the total exposure of a child (i.e., exposures from all other media). To address this potential shortcoming, the Agency considered candidate sets of standards for dust, lead, and paint together so that its comparisons of candidate standards reflected exposures to all media. Consequently, the standards, although they are medium-specific numbers will effectively identify hazards as long as all media are evaluated and compared to the standards.

Under the second option, EPA would set standards to account for total lead exposure from all media. Under a joint standard, the standard for each medium would vary, depending on the conditions in the other media. For a graphical [illustration of this option, see page 30308 of the preamble to the proposed rule. The major advantage of the joint standards is that they avoid anomalous situations. For example, it stands to reason that if both dust and soil measurements are just below the hazard levels--35 $\mu g/ft^2$ on the floor and 1,175 parts per million (ppm) in the non-play area--the situation is more dangerous than if one measurement is above the hazard level--e.g. 1,225 ppm for soil--and floor dust is at zero. Yet the first set of measurements would not constitute a hazard and the second set would. In these circumstances, joint standards may better reflect the total exposure and risk. Furthermore, for this option to be truly effective, EPA would need to know the levels from all sources of lead exposure and how they relate to blood lead levels individually and in various combinations. EPA, currently, lacks the analytical tools to support selection of joint standards. In addition, EPA is endeavoring to set the media specific hazard standards low enough that hazardous situations will not occur if both soil and dust are just below the standards. In such a case, the media specific standards could be overinclusive. The Agency, however, believes that this approach is appropriate to protect public health. Accordingly, in this rule EPA is establishing media-specific standards. Additional explanation for this decision

can be found on pages 30308 and 30309 of the preamble to the proposed rule.

E. Applicability and Uses of the Standards

The standards established in this rule apply to target housing (i.e., most pre-1978 housing) and child-occupied facilities (pre-1978 non-residential properties where children under the age of 6 spend a significant amount of time such as daycare centers and kindergartens). The standards are intended to be used prospectively. That is, they should be used to identify properties that present risks to children before children are harmed. This, of course, would not prevent them from being used retrospectively in the case of environmental intervention blood lead investigations and clearance of resulting lead hazard control activities.

These standards are not appropriate as the sole source of information to use when identifying the source of exposure for a lead-poisoned child. When a property is being evaluated in response to an identification of a lead-poisoned child, the risk assessor in cooperation with local public health officials should identify and consider all sources of lead exposure. For example, a risk assessor should consider lead in drinking water as well as the presence of any amount of deteriorated lead-based paint.

Within the scope of Title X, these regulatory standards will help support and implement major provisions of the statute. They will be incorporated into the risk assessment work practice standards, providing the basis for risk assessors to determine whether lead-based paint hazards are present. By helping to determine when a hazard is present, the standards will help determine when a hazard control activity must be performed by certified personnel. EPA further notes that only abatement of lead-based paint hazards specifically hazardous lead-based paint, dust-lead hazards or soil-lead hazards identified in 40 CFR 745.65 requires certified personnel. This is because ''abatement'' is defined in 40 CFR 745.223 as ''measures designed to permanently eliminate lead-based paint hazards.'' Thus, permanent elimination of lead-based paint, and dust or soil lead would not require the use of certified personnel unless lead-based paint hazards are present in those media.

States and Tribes wishing to obtain or retain authorization to administer and enforce training and certification programs must incorporate hazard standards as protective as the standards in this rule. Provisions for State and Tribal authorization are described at 40 CFR part 745, subpart Q. These standards will also help property owners comply with section 1018 by establishing what conditions must be disclosed to prospective purchasers and renters as *lead-based paint hazards* prior to the sale or rental of target housing. HUD, the Department of Defense (DoD), and other Federal agencies will use these standards in implementing or overseeing the evaluation and control of hazards in Federally-assisted housing and Federally-owned housing prior to disposition. (24 CFR part 35)

Under section 1018 of Title X (42 U.S.C. 4852d), EPA and HUD have jointly developed regulations requiring a seller or lessor of most pre-1978 housing to disclose the presence of any known lead-based paint and lead-based paint hazards to the purchaser or lessee (24 CFR part 35, subpart A; 40 CFR part 745, subpart F). When these section 403 rules become effective, lead-based paint hazards in lead paint, dust or soil will need to be disclosed. EPA further notes, however, that under the section 1018 rules, the seller or lessor also must provide the purchaser or lessee any available records or reports ''pertaining to'' lead-based paint, lead-based paint hazards and/or any lead hazard evaluative reports available to the sellor or lessor (section 1018(a)(1)(B). See 40 CFR 745.107(a)(4). Accordingly, if a seller or lessor has a report showing lead is present in levels that would not constitute a hazard, that report must also be disclosed. Thus, disclosure is required under section 1018 even if dust and soil levels are less than the hazards. EPA notes, however, that with respect only to leases of target housing, disclosure is not required in the limited circumstance where the housing has been found to be lead-based paint free by a certified inspector (24 CFR 35.82; 40 CFR 745.101), although voluntary disclosure of such certifications is encouraged.

Beyond the scope of Title X, these standards will guide the control of lead-based paint hazards in the nation's housing stock.

Although other regulations (e.g., hazard evaluation and control in housing receiving Federal assistance and Federally-owned housing prior to sale) may require property owners to evaluate properties for the presence and/or control of lead hazards, today's action does not contain such requirements. Specific requirements are determined by the particular State, Federal, and local government regulations which mandate actions when health hazards are found in target housing or child-occupied facilities. EPA, however, strongly recommends that property owners or other decision makers take appropriate actions to reduce or eliminate hazards. Finally, the standards provide property owners and other decision makers with the Federal government's best judgement concerning lead dangers in residential paint, dust, and soil.

The standards were established assuming that property owners and other decision makers would identify and control hazards in all three media (i.e., paint, dust, and soil). Failure to take a multimedia approach may not provide adequate protection to children. First, the protectiveness of the standards assumes that all media will be appropriately addressed. Second, failure to address one or more medium leaves children at risk from exposure to lead in media that are not addressed. Third, failure to address one or more media reduces the effectiveness of hazard control actions that are taken due to recontamination of one media from lead in another. Fourth, the Agency believes that soil can be a source of exposure whenever it is accessible for either incidental ingestion or tracking into a home, and that while grass and other coverings may be effective in significantly reducing potential exposures, such coverings must be maintained in order to provide continuing protection.

F. Summary of the Final Rule

1. *Hazardous lead-based paint (§ 745.65(a)).* The hazard standard for lead-based paint, called the ''paint lead hazard,'' is any of the following:

a. Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the dust hazard levels.

b. Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component.

c. Any chewable lead-based paint surface on which there is evidence of teeth marks.

d. Any other deteriorated lead-based paint in residential buildings or child-occupied facility or on the exterior of any residential building or child-occupied facility.

The purpose of identifying almost all deteriorated lead-based paint as a paint lead hazard is to alert the public to the fact that all deteriorated lead-based paint should be addressed--through use of paint stabilization or interim controls. Something less than abatement and certified personnel, however, would be needed to undertake interim controls or to abate lower levels of deterioration.

Two existing HUD and EPA rules provide the applicable standards: HUD rules under sections 1012 and 1013 of Title X published on September 15, 1999 (61 FR 50140), and EPA work practice rules under section 402 of TSCA published on August 29, 1996 (61 FR 45778) (FRL–5389–9). In general, these rules provide that occupant protection procedures, clearance testing, use of certified personnel or other similar specialized lead hazard control practices and procedures are not required if one or more of the following conditions exist:

a. Two square feet or less of deteriorated lead-based paint in a room.

b. Twenty square feet or less of deteriorated exterior lead-based paint;

c. Ten percent of the total surface area on an interior or exterior type of component with a small surface area consist of deteriorated lead-based paint.

2. *Dust standards*. Today's regulation includes two standardsfor dust: hazard levels for floors (including carpeted floors) and interior window sills (§ 745.65(b)) and clearance standards for floors (including carpeted floors), interior window sills, and window troughs (§ 745.227(e)(8)(viii)). The dust-lead hazard standards are 40 μg/ft^2 for floors based on a weighted average of all wipe samples and 250 μg/ft^2 for interior window sills based on a weighted average of all wipe samples. The weighted average, or weighted arithmetic mean, means the arithmetic mean of sample results weighted by the number of subsamples in each sample. Its purpose is to give influence to a sample relative to the surface area it represents.

The clearance standards for dust following an abatement are 40 μg/ft^2 for floors, 250 μg/ft^2 for interior window sills, and 400 μg/ft^2 for window troughs. The dust-lead level must be less than the applicable standard for the surface to pass clearance. Clearance standards are used to evaluate the effectiveness of cleaning following an abatement, and EPA may also use these standards in future rulemakings to evaluate the effectiveness of cleaning following a renovation and remodeling project. Properties that undergo abatement must pass clearance according to the work practice standards for abatement found at 40 CFR 745.227. If a property fails clearance, it must be recleaned until it passes, although it is not automatically necessary to reclean the entire property when clearance fails, such as when some of the visual and dust-testing clearance results have indicated that portions of the property are already cleared.

3. *Soil standards*. Today's regulation establishes the following standards for bare residential soil: a hazard standard of 400 ppm by weight in play areas based on the play area bare soil sample and an average of 1,200 ppm in bare soil in the remainder of the yard.based on an average of all other samples collected. See § 745.65(c). The final rule also identifies lead-contaminated soil as soil with levels equal to or greater than these soil-lead hazard standards.

Property owners and other decision makers should implement effective measures to reduce or prevent childrens' exposure to lead in soil that exceeds these levels. These measures may incorporate, but are not limited to, interim controls that include covering bare soil and placement of washable doormats in entryways. The need for more permanent controls should be determined with consideration of local conditions and usage patterns, the relative risks from different lead sources, and the potential for exposures to change over time.

4. *Summary of other actions*. Today's rule also amends existing regulations for lead-based paint activities including:

a. Requirements for interpreting the results of a lead-based paint risk assessment sampling for purposes of determining if lead-based paint hazards are present.

b. Changes to the risk assessment work practice standards at 40 CFR 745.227 to require testing of all deteriorated paint on surfaces with a distinct painting history to determine if the paint is lead-based.

c. Changes to the dust and soil sampling locations in the risk assessment work practice standards at 40 CFR 745.227.

d. Work practice standards for the management of soil removed during an abatement.

e. Amendments to the State and Tribal program authorization requirements under 40 CFR part 745, subpart Q; and

f. Amendment to the definition of ''abatement'' at 40 CFR 745.223 to make it clear that abatement does not include removal of paint, dust, and soil unless lead-based paint hazards are present in those media.

G. Limitations of the Hazard Standards

As stated in the proposed rule (63 FR at 30304), there is significant confusion about the requirements and purpose of the TSCA section 403 regulations. Consequently, EPA felt it necessary in the preamble to the proposed rule to highlight major limitations and other issues related to the scope and use of the regulation. These statements continue to apply. To summarize, the regulation does not establish a new definition for lead-based paint. The hazard standards apply to conditions observed when the risk assessment was performed. The standards do not address the potential for a hazard to develop. The standards apply to target housing, but may be used as guidance for other residential property. Finally, the standards are intended to identify dangerous levels of lead, not housing that is free from risks associated with exposure to lead.

As stated in Unit II.F.3., today's rule establishes two hazard standards for bare residential soil; 400 ppm for play areas and an average of 1,200 ppm for the rest of the yard. EPA recommends that organizations and individuals consider some action in certain areas even where levels in bare soils are below the hazard standard, particularly, if there is a concern that children 6 years and under might spend substantial time in such areas, or if there is concern that the bare soil in such areas may contribute to lead levels in the dwelling, or in the play areas. However, this rule does not mandate that any action be implemented when levels are found to be below the lead hazard standard. Moreover, the kind of response that organizations and individuals might consider could include modest actions such as planting grass (or other ground cover) to more extensive actions such as covering the bare soil with several inches of clean fill.

As indicated in Unit II.E., it is also important to emphasize that this rule only applies to pre-1978 target housing and certain child-occupied facilities, and that these standards were not intended to identify potential hazards in other settings. If one chooses to apply the hazard level to situations beyond the scope of Title X, care must be taken to ensure that the action taken in such settings is appropriate to the circumstances presented in that situation, and that the action is adequate to provide any necessary protection for children exposed. See also Unit IV.D. for a discussion regarding the relationship of the soil hazard standard to Superfund soil cleanup standards.

H. Preamble Overview

The remainder of this preamble consists of four units. Unit III. presents an explanation of the Agency's decisions. It includes a summary of the proposal, identifies the major changes between the proposed and final rules, and explains the changes. Unit IV. presents a discussion of some of the more significant issues raised by the public comments. Unit V. contains the

references for sources used in this preamble. Unit VI. is the regulatory assessment unit, which deals with the Federal requirements for agency rulemaking that are imposed by various statutes and executive orders. Unit VII. discusses the Congressional Review Act requirements.

III. Explanation of the Agency's Decisions

A. Summary of the Proposed Regulation

EPA published the proposed regulations on June 3, 1998 (63 FR 30302) (FRL–5791–9). The proposed standard for hazardous lead-based paint was lead-based paint in poor condition, defined as more than 10 ft^2 of deteriorated lead-based paint on exterior components with large surface areas, more than 2 ft^2 of deteriorated lead-based paint on interior components with large surface areas, or deteriorated lead based paint on more than 10% of the total surface area of interior or exterior components with small surface areas. Lesser amounts of deteriorated paint were considered *de minimis* levels and were not considered hazards. The proposed standard for a dust lead hazard was the average level of lead in dust that equals or exceeds 50 $\mu g/ft^2$ on uncarpeted floors and 250 $\mu g/ft^2$ on interior windows sills. The proposed standard for soil-lead hazard was lead that equals or exceeds 2,000 ppm based on a yard-wide average soil-lead concentration. A soil-lead level of concern, proposed to be 400 ppm, was included in draft guidance but not in the proposed regulation. The statutory basis for the level of concern was the section 403 requirement that EPA identify ''lead-contaminated soil,'' which the Agency interpreted to be a level less than the soil-lead hazard. EPA used the term ''level of concern'' instead of ''lead-contaminated soil. EPA proposed that lead-based paint hazards be identified by certified risk assessors performing risk assessments according to the work practice standards at 40 CFR 745.227.

The June 3, 1998 document also proposed amendments to existing regulations for lead-based paint activities including:

1. Clearance standards for dust following an abatement of 50 $\mu g/ft^2$ for uncarpeted floors, 250 $\mu g/ft^2$ for interior window sills, and 800 $\mu g/ft^2$ for window troughs.

2. Requirements for interpreting the results of a lead-based paint risk assessment sampling for purposes of determining if lead-based paint hazards are present.

3. Changes to the dust and soil sampling locations in the risk assessment work practice standards at 40 CFR 745.227.

4. Work practice standards for the management of soil removed during an abatement; and

5. Amendments to the State and Tribal program authorization requirements under 40 CFR part 745, subpart Q.

B. Summary of Significant Changes from the Proposed Regulation and Other Major Decisions

This section of the preamble briefly presents the major changes between the proposal and final rule. EPA also identifies major provisions of the proposed regulation that remain unchanged in the final rule. Unit II.D. of the preamble presents the Agency's explanation for these decisions.

1. *Dust standards*. The final rule changes the lead-based paint hazard standard for dust, known as the dust-lead hazard, and the standard for dust clearance for floors to 40 $\mu g/ft^2$. In addition, the dust-lead hazard will apply to all floors, including carpeted floors. It will not be limited to bare floors. The final rule does not change the dust-lead hazard for interior window sills. Today's action lowers the clearance level for window troughs from the proposed 800 $\mu g/ft^2$ to 400 $\mu g/ft^2$. In addition, the final rule modifies the method for interpreting composite dust clearance samples. Under the proposed rule, the result of the composite sample would have been compared to the clearance level divided by the number of subsamples in the composite. The final rule requires the result of the composite sample to be compared to the clearance level divided by half the number of subsamples in the composite.

2. *Soil standards*. With respect to the soil standards, there are several changes from the proposed rule. First, EPA is not establishing any distinction between lead-contaminated soil (soil lead ''level of concern'') and soil-lead hazards. Instead, EPA is, in the preamble, simply identifying lead-contaminated soil as soil with levels equal to or greater than the soil-lead hazard standards. For purposes of this rule ''lead-contaminated soil'' is the same as a ''lead-based paint hazard'' based on soil lead.''

Second, in the final rule EPA is establishing the lead-based paint hazard standard for bare soil, known as the soil-lead hazard standard, to have one hazard level for play areas and another for the remainder of the yard. The proposed rule did not give special attention to play areas and made the hazard determination based on the whole yard only. From the proposed 2,000 ppm for bare soil in the entire yard, EPA is setting a final soil-lead hazard of 400 ppm for bare soil in play areas and an average of 1,200 ppm for bare soil in the non-play area portion of the yard.

3. *Paint standards*. The paint component of the lead-based paint hazard standards is known as the paint-lead hazard. The paint-lead hazard consists of three standards: Deteriorated lead-based paint; lead-based paint on friction and impact surfaces; and lead-based paint on accessible (chewable) surfaces.

a. *Deteriorated paint*. EPA considers that, in general, any deteriorated lead-based paint needs to be addressed and should be considered a paint-lead hazard. Accordingly, in the final rule the Agency does not have a *de minimis* level of deteriorated paint for the paint-lead hazard. Instead, the final rule simply refers to work practice and certification regulations issued by HUD and EPA that apply to dealing with paint-lead hazards. These regulations provide that occupant protection procedures, clearance testing, use of certified personnel or other similar specialized lead hazard control practices and procedures are not required at lesser levels of paint deterioration. These specific levels of deterioration are (i) Two square feet or less of deteriorated lead-based paint per room; (ii) twenty square feet or less of deteriorated exterior lead-based paint; (iii) ten percent of the total surface area on an interior or exterior type of component with a small surface area.

b. *Friction and impact surfaces*. The standard in the final rule for the paint-lead hazard on friction surfaces is lead-based paint that is subject to abrasion where the lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the lead-dust hazard levels. The paint-lead hazard for impact surfaces is any damaged or otherwise deteriorated paint on an impact surface that is cause by impact from a related building component. No minimum area threshold of paint deterioration applies to friction or impact surfaces. In the proposed rule, EPA did not include a preferred option for these surfaces. The Agency, instead, solicited public comment on a range of options including: Lead-based paint regardless of condition on a friction/impact surface; abraded lead-based paint on a friction/impact surface; and no separate standard.

c. *Surfaces accessible for chewing or mouthing*. The standard for the paint-

lead hazard on accessible surfaces, referred to as ''chewable'' surfaces in the final rule, is any chewable lead-based paint surface on which there is evidence of teeth marks. No minimum area threshold applies to deteriorated lead-based paint on accessible surfaces. In the proposed rule, EPA did not include a preferred option for these surfaces. The Agency, instead, solicited public comment on a range of options including: Lead-based paint regardless of condition on interior window sills up to 5 feet off the floor; and no separate standard for accessible surfaces. EPA has eliminated the 5–foot requirement.

4. *Requiring certified risk assessors to determine the existence of lead-based paint hazards.* The final rule does not include a requirement that the presence of lead-based paint hazards must be determined by certified risk assessors following the risk assessment work practice standards at 40 CFR 745.227.

C. Explanation of the Agency's Decisions

In this section of the preamble, EPA provides its reasons for choosing the final TSCA section 403 standards for lead-based paint hazards (which includes paint-lead, dust-lead, and soil-lead hazards) and its final determination for what constitutes lead-contaminated dust and residential soil. In addition, EPA provides its reasons for establishing the clearance levels for household dust--measures of dust in lead that will show that hazards have been appropriately cleaned.

The choice of the particular methodologies used to develop each of these standards constitutes another important set of decisions. Hazard levels for dust and soil were developed using an analysis of risk, the potential for risk reduction (considering uncertainties in the data and scientific evidence describing the risks), and the cost of reducing risk. In determining the paint-lead hazard, EPA has decided that any deteriorated lead-based paint would result in adverse health effects, based on information submitted in public comments and other information in the rulemaking record. The Agency has been unable to determine any level of deteriorated lead-based paint that should not be considered a paint-lead hazard.

The general outline of these methodologies is referred to in later sections of this Unit and, where applicable, incorporates into the final rule those decisions made in the preamble to the proposed rule.

1. *Basis for dust and soil standards.* As a preliminary matter, EPA has found, after considering all significant public comments and all other information in the rulemaking record, that the legal interpretations and policy decisions in the preamble to the proposed rule form the basis for the final decisions discussed in this preamble, except as indicated below. EPA hereby incorporates, for purposes of this final rule, the relevant reasoning and analyses from the proposed preamble, as indicated below. Any modifications to the analyses or reasoning from the preamble to the proposed rule will be specifically explained in this preamble, the Reponse to Comment (RTC) document, or other documents in the record, and are supported by the record for the final rule.

a. *Legal basis.* Details of the basic legal structure of Title X and the legal effect of the issuance of regulations under TSCA section 403, including the responsibilities of EPA and HUD, are set forth in the preamble to the proposed rule (63 FR 30306) and need not be repeated here. There EPA provided a detailed discussion of its views at the time of the statutory mandate and the statutory criteria, including the Agency's interpretation of relevant terms and the statutory basis for the Agency's decision to use particular criteria to develop the determination for what constitutes lead-contaminated dust and lead-contaminated soil and the hazard standards for dust, soil and paint at (63 FR at 30311–30315). EPA has modified some of these interpretations and retains others, as discussed below.

EPA needs to define three terms under TSCA section 403, ''lead-based paint hazards,'' ''lead-contaminated dust'' and ''lead-contaminated soil.'' Lead-based paint hazards consist of lead-contaminated paint, lead-contaminated dust and lead-contaminated soil that ''would result'' in adverse health effects.

Section 401(9) of TSCA provides a definition of lead-based paint, which EPA interprets to be lead-contaminated paint for purposes of this rule. EPA noted that lead-based paint is not, under the statute, a risk-based term, but only a benchmark that identifies material subject to jurisdiction of the authorities of TSCA and Title X. Not all lead-based paint is a hazard, only that paint which EPA determines ''would result'' in adverse health effects. EPA has determined, as discussed below, that the dust and soil levels designated as lead-based paint hazards are also identified as ''lead-contaminated dust'' and ''lead-contaminated soil.'' This equating of dust and soil contamination with ''lead-based paint hazards'' caused by dust and soil lead represents a change from the reasoning in the preamble to the proposed rule. EPA's reasons for this change are discussed below.

EPA generally refers to the hazards in each of the media as ''paint-lead hazards,'' ''dust-lead hazards'' and ''soil-lead hazards.''

i. *Decision on contaminated dust and soil.* While section 403 obligates the Agency to identify lead-based paint hazards, lead contaminated dust, and lead-contaminated soil, the legislative history and statutory text are themselves silent on how Congress intended the Agency to differentiate between the standard for soil contamination (the level of lead in soil determined to be hazardous to human health), dust contamination (the level of lead in dust that poses a threat of adverse health effects in pregnant women or young children), and the levels of contaminated dust or soil that constitute a lead-based paint hazard (a condition that would result in adverse human health effects). Further, the terms ''lead-contaminated dust'' and ''lead-contaminated soil'' have no significance under either TSCA or Title X except insofar as the level of contaminated dust or soil constitutes a ''lead-based paint hazard''.

In the proposed rule EPA considered that, because the statute required the identification of ''lead contaminated'' dust and soil, the Agency needed to establish separate levels for these terms than for ''lead-based paint hazards'' resulting from contaminated dust or soil. Furthermore, EPA proposed, based on the statutory language and the structure of the statute, that the determination of whether dust or soil were contaminated required less certainty than whether such dust or soil constituted a hazard. See 63 FR 30311-12. In the preamble to the proposed rule EPA set the ''contamination'' levels, then called ''levels of concern,'' at those levels the Agency determined could result in a 1 to 5% probability of an individual child's exceeding a blood lead level of 10 µg/dL. See 63 FR 30316-30317.

EPA noted, however, that the terms, ''lead-contaminated'' dust and soil have no direct effect on any activities subject to regulation under Title X. For example, no certification requirements are imposed for persons who remove lead-contaminated soil, only for those who remove soil associated with soil-lead hazards. Because the contamination levels do not affect other activities under Title X or TSCA Title IV, EPA proposed not to include them in the regulatory language. EPA only proposed to adopt in guidance to accompany the final rule a separate level for lead-contaminated soil of 400

ppm for the entire yard. EPA did not propose to adopt a separate standard for contaminated dust, since it found substantial overlap in its analysis and could not distinguish between dust-lead contamination and dust-lead hazards.

EPA received a significant number of comments criticizing the establishment of these ''contamination'' levels, particularly for soil, primarily because setting two levels for ''contamination'' and ''hazard'' would confuse the public. Other comments claimed EPA had no authority to establish separate contamination levels, as opposed to hazard levels.

While the Agency clearly has authority to establish separate levels for contaminated dust and soil, given the comments, the lack of clear statutory direction, and the lack of significance of the terms in the statutory structure, the Agency has determined not to establish any separate levels for contaminated dust or soil beyond those levels that constitute a lead-based paint hazard. The Agency believes it sufficient for purposes of TSCA and Title X to conclude that, at a minimum, the quantity of lead in dust or soil found to result in conditions that cause exposure to lead that would result in adverse human health effects (i.e., constitutes a lead-based paint hazard) is ''lead-contaminated dust'' and ''lead-contaminated soil,'' respectively. Accordingly, for purposes of this regulation, the dust and soil levels designated as lead-based paint hazards are also identified as ''lead-contaminated dust'' and ''lead-contaminated soil''.

ii. *Weight of evidence for dust and soil hazard standards.* EPA's dilemma in determining what constitutes dust-lead and soil-lead hazards is based on the Agency's recognition that any determination of hazard requires a great deal of judgment in the case of lead health risks where, ''as a practical matter, all the scientific evidence is uncertain to some degree . . .'' (See preamble to the proposed rule at 63 FR 30313.) Making judgments on the science varies to a large extent with respect to three issues: How to determine which blood lead levels are truly hazardous; how to interpret the statutory language ''result in adverse human health effects,'' when uncertainties exist; and how best to account for uncertainties in the risk analyses that relate environmental lead levels to blood lead levels and the prevalence data that is used in this analysis.

The resolution of these issues, at best, produces a continuum where, at one end, blood and environmental levels exist that everyone would agree constitute a hazard. At the other end, approaching blood lead levels in the general population (averaging lower than 5 μg/dL) or typical environmental levels (generally, less than the hazard levels found in this regulation), greater uncertainty exists on how to model the likelihood of health effects. This is compounded by having to factor in uncertainties of the effects of both blood lead levels and the associated environmental levels. This is because, even if EPA has confidence in the blood lead levels of concern, the Agency still faces the uncertainty of associating blood lead with environmental levels in each medium, as well as possible effects from other sources--for example, water and air emissions.

In addressing the first issue, the Agency has chosen 10 μg/dL as the blood-lead level of concern. This value is equal to the level of concern recommended by the CDCP and the Agency's reasons for choosing this value are explained in the next section of this preamble.

As to the second issue, the challenge to the Agency is how to deal with the statutory criterion, ''would result in adverse human health effects.'' This is especially problematic because the statutory mandated activity that requires EPA to choose a cutoff for when this risk exists does not lend itself to a straightforward empirical analysis that provides bright lines for decision makers. Even if the science and environmental-lead prevalence data were perfect, there would likely be no agreement on the level, or certainty, of risk that is envisioned in the phrase ''would result in adverse human health effects.'' Thus, it would not be appropriate to base a lead-based paint hazard standard on any specific probability of exceeding any specific blood-lead level.

The Agency therefore elected to take a pragmatic approach to setting the hazard standards namely, evaluating the amount of risk reduction that the hazard standards could provide. That is, rather than trying to select standards based solely on model-based probability distributions (which is even further complicated by the fact that different models produce different results), the Agency looked at the consequences of the standards based on the assumption that, if EPA calls something a ''lead-based paint hazard,'' all persons would act rationally in their own best interests and would permanently eliminate (abate) these hazards before a child is about to become exposed to them. This is the so-called ''normative'' analysis referred to in the preambles to the proposed and final rule and discussed in detail in the economic analyses and preambles for the proposed and final rules. (EPA's analysis for using this method for determining what constitutes dust and soil hazards is discussed in detail in the preamble to the proposed rule at 30312-15. That analysis is incorporated as the final interpretation of the Agency on this matter and will not be repeated in great detail here. Later in this preamble, EPA responds to the various public comments on its analysis of the appropriate method for determining dust and soil lead-hazards under TSCA section 403.)

Also, identification of lead-based paint hazards under this regulation is sure to have impacts that could be expensive even though the range of expenses is, itself, difficult to resolve because of the uncertainty of individual behavior and the willingness of individuals to accept risks that EPA may identify. Thus, if EPA were to choose standards that are too low, the public could be unable to distinguish between trivial risks at the low levels of lead from the more serious risks at higher levels. This could result in clean up for little to no health benefit, or conversely, it could result in almost no clean up because persons would question the credibility of the ''hazard'' determination. Thus, they may ignore even those high risk situations that need to be controlled. On the other hand, if the Agency chooses standards that are too high, actual adverse effects could occur at levels below that. EPA's dilemma is to draw this line.

Based on the language of section 403, the purposes of Title X and its legislative history, and basic policy decisions, EPA determined that it was a reasonable exercise of its discretion to draw this line based on consideration of the potential for risk reduction of any action taken (considering uncertainties in the data and the scientific evidence describing the risks) and whether such risk reductions are commensurate with the costs of those actions. This is commonly referred to as cost-benefit balancing. In this rule, EPA used cost-benefit balancing to assist in identifying the hazard standards. This method was useful because available data run through various models showed a range of environmental levels that could be associated with a particular blood-lead level (the surrogate used to approximate risk) and the potential reduction in blood-lead concentration/risk that could result from eliminating or controlling the environmental level. Given this range, EPA used cost-benefit balancing to assist in selecting the specific

standards for this rule from within the range bounded by the results of the models.

Using this approach, the Agency is better able to deal with the third issue identified above how to best consider and account for the strengths and weaknesses of its risk assessment tools and data. For example, in estimating the number of homes that would be identified as hazards at various environmental lead levels, the Agency relied upon data from the HUD National Survey. Obviously, when assessing the impacts of standards at lower environmental lead levels, estimates are more likely to be inaccurate due to the presence of outliers in the data than would be the case in the middle range of the data. Additionally, the Agency must consider the range of exposures over which its models relating environmental lead to blood lead can be expected to perform well and the sensitivity of those models to the data inputs. By considering at which points in its analyses the data and models are strongest and weakest, the Agency can identify where in its analyses the greatest levels of certainty exist. Consideration of these factors is described in section 3.b., which discusses the selection of the dust and soil hazard levels.

b. *Choosing the lowest candidate hazard standards.* While EPA is no longer considering the determination of what constitutes lead-contaminated dust or soil to be governed by different standards from those used in the determination of what constitutes dust or soil-lead hazards, the analysis used in the proposal to determine the contamination standards is still relevant to the consideration of options for the hazard standards. This is because the effect of choosing the proposed dust and soil lead contamination standards based on a 1 to 5% probability of an individual child's having blood lead levels exceeding 10 µg/dL was to establish the lowest candidate hazard standards. In the proposal, this was for dust 50 µg/ft^2 on uncarpeted floors and 250 µg/ft^2 for sills and for soil 400 ppm in the entire residential yard. Additional analysis, as noted below in discussion of the dust and soil hazard level determination, was applied to actually develop the hazard standards.

Furthermore, as noted above, the determination of which blood lead levels are truly hazardous (the blood lead level of concern) was the first scientific issue EPA had to decide in selecting dust and soil lead hazards.

Accordingly, EPA adopts as the basis determining the lowest candidate standards for the final dust and soil lead hazards the same policy basis used in the proposal for choosing dust and soil lead contamination levels--a 1 to 5% probability of a child's developing a blood lead level of 10 µg/dL.

The choice of 10 µg/dL is based on a significant body of scientific evidence, extensively cited in the preamble to the proposed rule, that shows that a number of significant health effects manifest themselves in the 10-15 µg/dL range. EPA hereby incorporates as the basis for its final decision on the blood lead concentration of concern all relevant discussions in the preamble to the proposed rule, particularly the discussion at 63 FR 30316-17. The Agency's decision is supported by past statements made by the Clean Air Science Advisory Committee and is consistent with Federal policy established by the CDCP and the recommendations of the National Academy of Sciences (NAS). The Agency wishes to emphasize, as it stated in the proposed rule, that this choice does not imply that 10 µg/dL is a threshold level. On the contrary, EPA maintains its position that there is no known threshold for lead. EPA decided not to use a level lower than 10 µg/dL because the evidence indicates that health effects at lower levels of exposure are less well substantiated, based on a limited number of children, and observation of subtle molecular changes that are not currently thought to be sufficiently significant to warrant national concern.

The choice of probability is based on the Agency's interpretation of the statute and the limits of EPA's analytical tools. The Agency rejected the lowest possible probability, which is zero. Even without lead-based paint and lead-contaminated soil and dust, there could be some small mathematical probability that a child could still have a blood-lead level equaling or exceeding 10 µg/dL. This is because other sources of exposure (e.g., air, water, diet, and background levels of lead) remain. Because under the statute EPA may only account for risks associated with paint, dust and soil, a zero exceedence probability would not make sense for this rule.

In addition, EPA's assessment for this rule indicates that, as a practical matter, in the context of establishing on a national level the initial candidate for the hazard level, the probabilities that given environmental levels of lead ''would result'' in blood lead levels of concern, 1% is not distinguishable from 5% in estimating risks from soil lead. This is because, within the context of the analyses for this rule, there was substantial overlap in estimates of risk from soil lead within the 1 to 5% risk range. This overlap is due to the uncertainty and variability related to EPA's analyses to associate low levels of lead in a specific environmental medium to blood-lead concentrations and limited data. For example, results from models used to relate environmental levels to blood lead levels vary depending upon what is assumed about the interrelationship between dust and soil. Also, in the performance characteristics analysis (explained below), the number of children was small, yielding similar results for a 1% exceedence as for a 5% exceedence. In effect, EPA is setting the exceedence probability as close to zero as it is able (within analytical limits of its analyses) for the effects of lead paint and lead in dust and soil.

In addition, given the data and analytical tools available to support this rulemaking, the Agency determined that, as a practical matter, 1% is not distinguishable from 5%. This overlap is due to the uncertainty and variability related to any effort to associate low levels of lead in a specific environmental medium to blood-lead concentrations and limited data. For example, in the performance characteristics analysis, the number of children was small, yielding similar results for a 1% exceedence as for a 5% exceedence. In effect, EPA is setting the exceedence probability as close to zero as it is able (within analytical limits of its analyses) for the effects of lead paint and lead in dust and soil.

At the other end of the range considered by EPA was an exceedence probability of 10%. With this distribution of risk, a child would have approximately a 2% chance of having a blood-lead concentration exceeding 15 µg/dL and a less than 1% chance of having a blood-lead concentration exceeding 20 µg/dL, the level at which CDC recommends medical intervention. In the proposal's discussion of the contamination standard, the Agency rejected this probability as presenting exceedingly high risks. For determination of a hazard level, they would also be excessively high. EPA believes it is inconsistent with the statute to establish a hazard standard at which significant numbers of children would need medical treatment.

c. *Basis for the dust and soil hazard standards.* As explained in the preamble to the proposal, EPA used cost-benefit balancing to establish a range of options for hazard standards. EPA then selected its preferred options based on consideration of relevant factors, including the assumptions and tools underlying EPA's analysis, health

protectiveness, cost, and the effect on the overall lead risk reduction program (63 FR at 30314–30315). The Agency refers the public to the proposal for the detailed discussion of its reasoning for choosing the approach to develop the hazard standards. EPA's approach for using cost benefit analysis is described in the proposed rule and is used for the final rule.

In this document, EPA wishes to highlight several points that merit special attention. First, the various modeling techniques used by EPA only established a range of possible answers upon which the Agency exercised its administrative judgement. EPA used its quantitative modeling as a tool to establish the boundaries of the Agency's inquiry, not as the sole basis for decisions. Because precise values cannot be assigned to risks (or costs), any cost-benefit balancing is appropriately used to help select an option within a range for the hazard standards. The Agency then selected its preferred options, from within the range bounded by the modeling results, based on consideration of relevant factors, including the weight of the evidence of harm, assumptions and tools that underlie EPA's analysis, as well as other factors, including health protectiveness and total costs.

To support the establishment of a range of options, EPA used a normative analysis which assumes that all hazards to young children will be identified and controlled. EPA adopted this approach not only in view of the obvious imprecision in its ability to estimate how the public will actually respond in terms of the number and scope of hazard control interventions that will be implemented in response to the standards, but also with the objective of allowing Agency decision-makers to compare costs and benefits. Thus, while the Agency can only estimate the theoretically possible costs and benefits associated with each option, not the actual costs and benefits, EPA is confident that the relative balance of costs and benefits estimated is unlikely to be very different from the relative balance of actual costs and benefits.

Finally, EPA wishes to emphasize that there is no set way to apply the balancing of costs and risk reduction. Where standards would require the high expenditure of resources, the level of risk reduction (considering both the toxicity of lead and the probabilities of exposure) and the strength of evidence should be correspondingly high. On the other hand, if the costs of standards are relatively low, the level of risk reduction and the strength of the evidence could be less compelling. As stated in the preamble to the proposed rule and as adopted in today's final rule, the determination on soil standards considers the fact that relatively high costs may be incurred to abate residential soils. Consequently, under a cost-benefit balancing concept, before selecting an option associated with high costs, EPA would want a greater measure of confidence that the standard would result in a higher level of risk reduction.

EPA recognizes that resources for abatement to address lead risks to children are often limited and that societies often have to set priorities. Therefore, establishing numerically low national standards could serve to dilute resources across more properties and communities instead of steering resources to address situations that present clearer, more certain risk. Along the same line of reasoning, the Agency believes that it is sound public policy for the hazard standard to embody a ''worst first'' approach that will aid in setting priorities to address the greatest lead risks promptly.

With respect to the paint component, data limitations prevented EPA from quantifying the costs and benefits of the options considered in the proposal (as well as for the final rule). Consequently, EPA's decisions with respect to the options for the paint component involved a more qualitative judgment on the part of the Agency in the proposal, as well as in the final rule. Later in this unit, EPA explains its decision for identifying what constitutes hazardous lead based paint.

2. *Technical analyses.* To support the development of the dust and soil hazard standards in this rule, EPA required tools to relate lead in the environment to blood-lead concentration. As described in the proposal to the proposed rule, EPA used several methods for this purpose: a mechanistic model that has been calibrated and validated with various empirical dataset and which simulates the body's response to lead exposure, and both modeling and non-modeling analyses of empirical data from the Rochester Lead in Dust Study. The mechanistic model is the Agency's Integrated Environmental Uptake and Biokinetic (IEUBK) model. The empirical data used in the modeling and non-modeling analysis to support this rule was obtained from a study of lead in Rochester, New York entitled ''Rochester Lead-in-Dust Study.'' The preamble to the proposed rule (63 FR 30315) contains a general overview of these tools. Given the uncertainties and limitations associated with any single approach, EPA decided that it would be helpful to obtain several perspectives (with different associated strengths and weaknesses) on the relationship between environmental lead and blood lead levels.

EPA thoroughly evaluated its choice of methods in response to public comments and all other information available to the Agency. EPA has concluded that it is appropriate to use the same methodology for its final decision. Based upon public comments and all other information in the rulemaking record, the Agency also recalculated the numerical results obtained for the proposed rule. These recalculations did result in some changes to the standards from those proposed, as is explained below.

a. *Initial candidate hazard levels*—i. *Dust.* For development of the proposed dust-lead contamination level (referred to as the level of concern) EPA used: A multimedia model based on the data from the Rochester Lead-in-Dust study and a performance characteristics analysis of the Rochester data. The reasons for using these models and their implementation is explained in the preamble to the proposed rule (63 FR at 30317–30319) in the Units titled ''c. Characterizing individual risk.'' and ''d. Dust analysis.'' For purposes of this analysis for determining the initial candidate levels for the final hazard standards, however, EPA judges it is appropriate to continue to use the same model, based on the same reasoning.

The multimedia model yielded the following results. The levels of lead in dust on floors associated with an individual child having from a 1 to 5% chance of having a blood-lead concentration equal to or exceeding 10 μg/dL range from near zero to 6.7 μg/ft^2. The range for dust loadings on window sills is from near zero to 74 μg/ft^2.

The performance characteristics analysis yielded the following results. For floors, dust-lead loadings ranged from 50 μg/ft^2 to 400 μg/ft^2. For interior window sills, dust-lead loadings ranged from 100 μg/ft^2 to 800 μg/ft^2. These ranges were significantly higher than the ranges yielded by the multimedia approach.

The performance characteristics analysis to support the determination that 1 to 5% of children would develop blood lead levels above 10 μg/dL remains unchanged for the analysis in this final rule. The results yielded by the multimedia model would put the environmental dust-lead levels at which 1-5% of children would develop blood lead levels above 10 μg/dL at near or below background levels and well below the residual levels that remain after homes have been well cleaned (i.e.,

the clearance levels). These results do not seem to make sense to the Agency since they imply that background levels in well cleaned homes would still be of concern from a risk perspective. Therefore, based upon public comments, the Agency reevaluated its analyses.

Based upon this reassessment, EPA decided to make some revisions to the way it applied the multimedia model so that its results would be more comparable to the performance characteristics analysis. This was accomplished by using the same set of parameters (average soil concentration, dust on floors and sills, and paint conditions) and the same subset of data from the Rochester Lead-in-Dust Study. Following these changes, the order of magnitude difference in results between the original multimedia model and the performance characteristics model virtually disappears. At 50 μg/ft^2, the performance characteristics shows a 7.5% risk of equaling or exceeding 10 μg/dL and the multimedia model shows a 5.34% risk. At 40 μg/ft^2, the performance characteristics shows a 5.1% risk of equaling or exceeding 10 μg/dL and the multimedia model shows a 5.30% risk. That is, under these analyses, floor dust levels at 40 μg/ft^2 correspond to 5% and less probability of blood lead levels exceeding 10 μg/dL. Thus, using the revised model, 40 μg/ft^2 is the standard that better meets the criteria spelled out in the Agency's proposal (less than 5% probability of exceeding 10 μg/dL). EPA provides a detailed description of this revised analysis in the ''Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil: Supplemental Report.'' EPA accordingly has chosen 40 μg/ft^2 as the initial candidate level for the dust-lead hazard level in today's final rule.

ii. *Soil*. In the proposed rule, EPA set a ''level of concern'' based on the Agency's IEUBK model and a performance characteristics analysis of the Rochester data. The reasons for using these models and their implementation is explained in the preamble to the proposed rule (63 FR 30317, 30319) in the Units titled ''c. Characterizing individual risk'' and ''e. Soil Analysis.'' Under the IEUBK analysis soil-lead concentrations generally at or below 500 parts per million (ppm) would result in a 1 to 5% probability that a child will have a blood-lead concentration that equals or exceeds 10 μg/dL. The performance characteristics analysis for soil ranged from 200 ppm to 1,500 ppm correlated with 1 to 5% of children with elevated blood lead levels exceeding 10--μg/dL. EPA chose 400 ppm as the proposed soil lead contamination level. EPA adopts that same level as the initial candidate soil hazard standard for the same reasons as provided in the preamble to the proposed rule for choosing 400 ppm as the soil contamination level.

3. *Dust and soil hazard levels*. The analyses to support selection of the dust and soil hazard levels included evaluation of the nation-wide reduction in risk that could potentially result from a set of hazard standards. EPA measured the change in risk reduction in terms of an estimated change in the national blood-lead distribution, equated this change to reductions in several adverse public health outcomes (e.g., IQ point loss), assigned a value to these reductions, and compared these public health benefits to the costs of hazard intervention.

a. *Methodology*. EPA finds no reason to change its methodology of using a normative cost-benefit analysis for developing dust-lead and soil-lead hazards. The Agency, accordingly, adopts the reasoning set forth in the preamble to the proposed rule for conducting this analysis. The general overview of the cost-benefit analysis and its use in decisionmaking is provided in the preamble to the proposal (63 FR at 30319–30320) in the introductory paragraphs to the section entitled ''2. Dust-lead and soil-lead hazard standards''.

The methodology for estimating risk reduction is found in the section entitled, ''a. Estimating risk reduction.'' (63 FR 30320) and, partially, in the section entitled ''b. Estimating costs and benefits.'' (63 FR 30321). Methodology for estimating the monetary value to be assigned to the value of risk reduction that may be achieved by actions taken in response to the hazard standards is found in the section entitled ''b. Estimating costs and benefits.'' (63 FR at 30320–30321). Determination of the costs of actions that may be taken to reduce risk is in the same section at 30321-22 and in two paragraphs at 63 FR 30325 in the section entitled ''c. Results.'' The limitations, qualifications and uncertainties that affect both the estimates of benefits and costs are found at 63 FR 30322–30323 in the section entitled ''b. Estimating costs and benefits.''

The Risk Assessment was designed to estimate the declines in children's blood lead levels that would result if abatement and other response actions were taken in housing units that exceeded candidate standards for paint, dust, and soil. While certain details of the analysis are complex, the basic approach is straightforward. First, a baseline of environmental lead and blood lead levels was established. These represent the ''pre-403'' conditions.

For the pre-403 environmental lead levels, the Agency used the Department of Housing and Urban Development's National Survey of Lead-Based Paint in Housing (the HUD Survey). Conducted in 1989-1990, the HUD Survey measured the extent and condition of lead-based paint in housing, the amount of lead in dust within the housing, and the amount of lead in soil surrounding the housing. For the pre-403 blood lead levels, the Agency used Phase 2 of the third National Health and Nutrition Examination Survey (NHANES III). Conducted by the Centers for Disease Control and Prevention in 1991-1994, NHANES III included measurements of children's blood-lead levels.

Next, the Agency estimated the reduction in environmental lead levels that would result if abatements or other responses were performed in housing units that failed candidate standards for paint, dust, and soil. These levels represent the ''post-403'' environmental lead levels and rely upon estimates of the effectiveness and duration of the response actions.

The Agency then modeled the blood lead levels that would correspond to the pre- and post-403 environmental lead levels. This allowed an estimation the blood-lead reduction that would result from the standards (i.e., the difference in the blood lead levels from the pre-403 environmental levels to the post-403 environmental levels). Here, the Agency used two different models the Integrated Exposure Uptake Biokinetic (IEUBK) Model and an empirical model that was based upon the results of the Rochester Lead in Dust Study. Consequently, there are two different estimates of the blood-lead changes that would result from the 403 standards, one based upon each model. Finally, the two estimates of blood-lead changes were re-scaled by applying the pre-403 blood-lead levels in NHANES III. EPA repeated this process for each set of standards under consideration.

The two models of risk assessment were incorporated into the economic benefit-cost framework to generate net benefit estimates for the various candidate hazard standards. EPA wishes to emphasize that it is more important to consider the net benefit estimates relative to each other rather than their actual numerical value for the various candidate hazard standards. In order to apply these models in this national analysis, the models relating environmental lead to blood lead could not reflect the consideration of site-specific data to the extent that would be sought when they are applied locally.

Also, the Agency recognizes that the costs and benefits associated with the normative analysis are likely to overstate the actual costs and benefits associated with the standards since it is likely that not everyone will follow the rule recommendations and, to the extent they do not, benefits and costs would both be lower. This is not of great concern because the objective of this analysis is to provide EPA with a tool to compare options in terms of relative costs and benefits of each option, not to develop precise absolute estimates of costs and benefits.

Despite the limitations and uncertainties of the analysis, the results for options within each model can be compared. The limitations may affect the estimates of absolute costs and benefits, but these limitations should have similar effects on the estimates for each option. Additional discussion of how to interpret the results of the normative cost-benefit analysis is provided in the preamble to the proposed rule (63 FR 30323) at the beginning of the Unit entitled ''c. Results.''

b. *Results.* The results of the analysis, under each model, to determine dust-lead and soil-lead hazards for the proposed rule are found in the preamble to the proposed rule (63 FR at 30323–30325). The results of the analysis after the reevaluation for the final rule are presented in this section. The analysis' computation of net benefits is the difference between the total benefits estimate and the total costs estimate. Net benefits are an indicator of the societal gains from hazard controls. While the rule, in and of itself, does not impose a requirement to abate the hazards, for purposes of its risk analysis for this rule, EPA has assumed that abatement will be undertaken in all homes that exceed the levels when a child is born. This analysis does not account for the costs and benefits associated with child-occupied facilities because of the lack of available data and resources.

While the Agency has assumed that the remediation response to the presence of a paint, dust or soil lead hazard is abatement (e.g., removal or permanent covering for soil) for purposes of its analyses, it should not be concluded that the Agency has identified abatement as the only viable response to paint, soil or dust hazards. The Agency believes that well-designed and well-managed programs of interim controls can achieve significant reductions in hazards and, particularly for soil hazards, could be less expensive than removal.

As noted previously in this preamble, in performing its analyses for this rule, the Agency could not quantitatively compare interim control strategies with abatement strategies because there are only limited data available on the effectiveness of interim controls over extended periods of time, and those data which are available are not suitable for quantitative comparisons with abatements. Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. EPA believes that public and private organizations should evaluate both interim control and abatement strategies in determining the most effective course of action.

Therefore, while EPA does not have the authority under this statute to mandate any particular remediation action for lead-based paint hazards, it recommends strongly that some action be initiated--interim controls or abatement--if lead levels exceed the hazard standards. Morever, if bare soil-lead levels are below the hazard standard in non-play areas, the Agency recommends that organizations and individuals at least consider some action in bare soil in those areas if there is a concern that children under the age of 6 might spend substantial time in such areas, or there is concern that the bare soils in such areas may contribute to hazardous lead levels in the dwelling, or in the play area.

The IEUBK-based analysis and the Empirical-model-based analysis are only used to calculate the benefits of the various options. Costs are calculated in the same manner for both models. Total costs increase as options become increasingly stringent and are mainly a function of unit costs (costs for a single abatement) and the number of homes affected. Unit costs for dust are the same whenever a dust lead hazard is present. For soil, unit costs vary depending on the part of the yard being addressed by the abatement (e.g., dripline, mid-yard, play-area) and on whether the removed soil has to be managed as hazardous waste under regulations under the Resource Conservation and Recovery Act (RCRA). The unit cost is lower for lower soil-lead levels (below 2,000 ppm) because it is expected that the removed soil would not have to be managed as hazardous waste.

In the analysis for the proposed rule, unit costs for dust abatement were $ 391 for single-family homes and $ 262 for multi-family units (63 FR 30324). The preamble to the proposed rule (63 FR 30322) included the following complete range of unit costs for soil removal and other control actions as follows:

TABLE 1.—HAZARD EVALUATION AND CONTROL COSTS (PER ACTIVITY IN 1995 DOLLARS)

Activity	Single Family	Multi-family (per unit)
Risk assessment	456	235
Interior paint repair	437	437
Interior paint abatement	6,587	4,687
Exterior paint repair	807	182
Exterior paint abatement	5,706	2,275
Dust cleaning	391	262
Soil removal (dripline; nonhazardous waste)	2,046	399
Soil removal (mid-yard; nonhazardous waste)	7,878	777
Soil removal (both areas; nonhazardous waste)	9,008	901

TABLE 1.—HAZARD EVALUATION AND CONTROL COSTS (PER ACTIVITY IN 1995 DOLLARS)—Continued

Activity	Single Family	Multi-family (per unit)
Soil removal (dripline; hazardous waste)	3,443	541
Soil removal (mid-yard; hazardous waste)	16,486	1,351
Soil removal (both areas; hazardous waste)	19,013	1,617
Soil removal (play area, non-hazardous waste)	1,460	314
Soil removal (play area, hazardous waste)	2,129	359

It is important to note that, as printed in the proposal, this table contained a typographical error with respect to the cost of exterior paint abatement in single-family housing. This error was identified and corrected in a **Federal Register** document published on December 18, 1998 (63 FR 70087) (FRL–6048–3).

Total costs for the various options considered are found in Tables 4, 5, 6, and 7 of the proposal (63 FR at 30324–30325). Similar tables, although slightly revised as is described later in this section, are presented as Tables 7–A1 through 7–A4 in Appendix 7 of the Economic Analysis of the TSCA section 403 Lead-based Paint Hazard Standards Final Rule (December 2000) (Economic Analysis) (Ref. 14). As in the proposal, however, these tables do not include estimated costs or benefits of paint interventions, or any testing or risk assessment costs. Since only a single standard was considered for paint interventions, associated costs and benefits are omitted from the tables to permit a clearer presentation of the incremental changes in costs and benefits that are associated with changes in standards for the option considered. The Agency also omits testing and risk assessment costs in the tables below for a similar reason. Finally, in order to observe the effects of intervention in each medium separately, EPA held lead levels in all other media constant at baseline levels, which are based on the HUD National Survey data. In tables 7A-3 and 7A-4 for the estimated costs and benefits for soil-lead hazard standard, independent dust and paint interventions are assumed not to occur. Some dust interventions that are triggered by soil abatements are incorporated in these two tables.

The units of benefit and the value being assigned to them are presented in Table 2 below.

TABLE 2.—SUMMARY OF BENEFITS ANALYSIS ESTIMATE

Type of Effect	Description	Estimate	Source
Effect of a Single Point Reduction in IQ	Sum of the direct and indirect effects on the percent of earnings lost (2.379%) and express the effect in terms of the present value of average lifetime earnings	$9,360 in 1995 dollars	Product of the estimate of the present value of average lifetime earnings based on U.S. Department of Commerce ($366,021 (1992 $)) and the assumed percentage loss of earnings from a single point reduction in IQ of 2.379% (Salkever 1995)
Cost of Additional Education	Sum of the direct costs ($316) and opportunity costs ($627) of additional education	$1,014 in 1995 dollars	Sum of the estimate of the direct and opportunity costs of additional education based on U.S. Department of Education (1993) data
Total Effect of a Single Point Reduction in IQ	Subtract the costs of additional education from the effects on earnings lost	$8,346 in 1995 dollars	Accounting for the cost of additional education was based on Salkever (1995)
Special Education (IQ less than 70 points)	Cost of special education beginning at age 7 and ending at age 18	$53,836 in 1995 dollars	Kakalik et al. (1981) estimate annual incremental regular classroom costs of $6,458 in 1995 dollars for special education. This estimate is the discounted value of such costs for age 7 through 18.
Compensatory Education (Blood lead greater than 20)	Cost of compensatory education beginning at age 7 and ending at age 9	$15,298 in 1995 dollars	Kakalik et al. (1981) estimate annual incremental regular classroom costs of $6,458 in 1995 dollars for compensatory education. This estimate is the discounted value of such costs for age 7 through 9.
Medical Intervention (for several blood lead ranges)	Cost of blood lead screening and medical intervention for children less than six years old (by blood lead Risk Group)	Risk Group[1] I:$58; R.G. IIA: $70; R.G. IIA: $227; R.G. IIA: $417; R.G. IIA: $678; R.G. IIA: $9843; R.G. IIA: $9843	Recommendations and actual practice based on information from CDC (1991), AAP (1995), and medical practitioners. These estimates are the discounted costs per newborn associated with each blood lead Risk Group.

[1](All in $1995)

Calculations for the IEUBK-based analysis for a range of dust hazard options for floor dust and the soil hazard standard options are presented in the economic analysis (Ref 14). Discussion of the calculations is found at 63 FR 30323-25. The dust values for 40 μg/ft² will be discussed later in this preamble. Finally, the units of benefit and the value being assigned to them in these analyses are presented in Table 2.

In summary, total benefits increase as options become increasingly stringent, ranging from $ 50 billion to $ 88 billion for dust and from $ 16 billion to $ 145 billion for soil. As discussed in the Economic Analysis, the results presented for soil account for the fact that soil interventions (excluding those in play areas only) include dust interventions following the removal and replacement of soil, and thus incorporate the costs and benefits associated with dust interventions in addition to the costs and benefits associated with the soil abatement itself. Benefits increase at an increasing rate because, as dust and soil-lead levels decline, the number of homes at given environmental lead levels increases more quickly. For example, moving from a soil standard of 5,000 ppm to 4,500 ppm increases the number of homes exceeding the standard from about 600,000 to about 700,000 (an increase of about 100,000 housing units), while moving from 1,000 ppm to 500 ppm increases the number of homes exceeding the standard from about 6 million to 12 million (an increase of about 6 million housing units).

Because total benefits increase at a faster rate than total costs, net benefits also increase as options become increasingly stringent, ranging from $ 42 billion to $ 69 billion for dust and $ 13 billion to $ 103 billion for soil. The increase in net benefits is relatively constant as the dust standards become more stringent. For soil, net benefits increase slowly from 5,000 ppm to 3,000 ppm and increase more quickly from 3,000 ppm to 2,000 ppm and from 1,200 to 500 ppm. Net benefits increase because total benefits are increasing at a faster rate than total costs.

It is important to note that the above analyses do not take into account lead levels in other media. Controlling for other contributors to blood lead presents a different picture of the net benefits that result from moving to a more stringent standard.

Under the Empirical-model for floor dust, total benefits increase as options become increasingly stringent, ranging from $ 27 billion to $ 36 billion. For sill dust over the range of candidate standards that were considered, net benefits are in the maximum range at 250 μg/ft² and are slightly higher with floor dust standards of 50 μg/ft² as compared to 100 μg/ft². As is the case in the IEUBK model-based analysis, the rate at which benefits increase rises as the stringency of the options increase, because more homes are affected (and more children are protected). The rate at which benefits increase, however, is tempered somewhat because the relationship between dust and soil-lead and blood lead remains relatively constant across the range of options considered. The increasing number of children protected by more stringent standards is counter balanced by decreasing risk reduction predicted for children living in homes with low dust and soil-lead levels. That is, there are smaller changes in blood lead because there are smaller changes in environmental-lead between baseline dust-lead levels and post-intervention levels.

Of the combinations of dust standard options evaluated in the proposal, net benefits were relatively constant for all the combinations except the most and least stringent (floor = 50 μg/ft² with sill = 100 μg/ft² and floor = 100 μg/ft² with sill = 1,000 μg/ft², respectively). For the other options considered, benefits and costs increase at approximately the same rate, resulting in little change in net benefits. Specifically, the combinations resulted in net benefits of around $ 20 billion, which is also the case when a floor standard of 40 μg/ft² is considered.

Net benefits for soil range from $ -7 billion to $ 2 billion, approaching maximum levels near 5,000 ppm and 2,000 ppm. Below 2,000 ppm, net benefits decrease because total benefits increase at a slower rate than total costs. The increased number of children protected at more stringent standards is offset by a smaller predicted reduction in risk at lower environmental levels.

4. *Selection of the standards and other Agency decisions.* This section of the preamble presents the explanation of EPA's decisions regarding the standards for dust and soil lead hazard and paint-lead hazard standards.As part of the discussion of the Agency's decisions for each media, EPA is also presenting its decisions on related issues including sampling location and interpretation. The dust section will also include a discussion of the dust clearance standards, and the soil section will include EPA's decision regarding management of soils removed during abatement.

The clearance standards for dust, interpretation of composite clearance samples, soil management practices, and sampling location requirements are not being issued under authority of section 403 of TSCA, but under the work practice standards of section 402. Therefore, the legal reasoning, policy decisions, and technical analyses explained above do not have direct applicability to their promulgation. EPA is presenting these issues in this unit for public convenience, in order to keep all its decisions regarding each medium in one place in this preamble.

a. *Dust*—i. *Dust-lead hazard standards.* EPA has decided to adopt a dust-lead hazard standard 40 μg/ft² for floors and 250 μg/ft² for interior window sills) in the final rule. The floor standard is changed somewhat from the proposal but the window sill standard remains the same as for the proposal.

According to the Empirical model-based analysis for the proposal, the results of which are summarized in Table 6 of the proposed rule, four of six combinations of options for floor and window sill standards have net benefits in the maximum range (i.e., $ 21 to $ 22 billion). One combination (100 μg/ft² for floors, 1,000 μg/ft² for sills) provides significantly less risk reduction relative to cost; and one combination (50 μg/ft² for floors, 100 μg/ft² for sills) provides little additional benefit but costs increase significantly. Incremental benefits are less than one third the incremental costs and an additional 11 million homes would fall under the standard. EPA, therefore, considers that this lower standard for sills is associated with increased costs without commensurate attendant benefits.

Of the four combinations considered in the proposed rule, the 50/250 μg/ft² standard was found to be the most protective in terms of the amount of risk reduction yielded. The other three options, though less costly, also provided less risk reduction. The decrease in both costs and benefits as the combination of floor and sill options become less stringent were roughly the same (between $5 billion and $6 billion), resulting in little change in net benefits.

EPA's decision on the proposed floor standard was further supported by the results of the IEUBK model-based normative analysis, summarized in Table 4 of the preamble to the proposed rule, which showed that the net benefits for the proposed floor standard were greater than those for a less stringent standard; net benefits estimated by this analysis increased from $ 48 billion for 100 μg/ft² to $ 61 billion for the proposed 50 μg/ft² standard.

EPA reiterates that this normative cost-benefit analysis has been undertaken for comparative purposes

only to evaluate the hazard standards on a relative basis. However it does not mean to imply that billions of dollars will be spent on lead dust cleanup because the responses projected in the cost estimates may not necessarily reflect the behavior of residents and building owners over 50 years. These costs also reflect some extremely conservative assumptions, such assuming that all yards are potentially affected even if they actually contain no bare soil. These costs are put into better perspective when it is understood that the cost per residence of dust cleaning is less than $600 per affected residence over a 50–year period in 1995 dollars. In making this decision, EPA recognizes that the proposed standard could result in dust hazard interventions in perhaps as many as 20 million homes. Although this is a very large number of homes, the cost of intensive dust cleaning is relatively low for individual residences.

EPA decided to propose the 50 μg/ft² and 250 μg/ft² standards respectively for floors and sills because the Agency preferred to select the most protective of the four combinations.

In the proposal, the Agency did not consider a floor standard option less than 50 μg/ft² because, in its risk analysis, EPA's best estimate was that the post-intervention dust-lead loading would be the lower of the pre-intervention dust-loading or 40 μg/ft². This was the Agency's best estimate of dust levels that would remain after controlling sources of lead and thoroughly cleaning the residence. It was based on an analysis of data from several abatement studies which is more fully discussed in Chapter 6 of the Agency's risk analysis (Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil, EPA 747–R–97–3006, June 1998) (Ref. 12). in the record for the proposed rule. In light of this estimate, EPA found it would be impractical to set the standard for floors lower than 40 μg/ft² because little or no risk reduction would likely to be achieved for homes that had dust-lead loadings at or below 40 μg/ft².

In the preamble to the proposed rule, EPA stated that, if new data were to become available before promulgation of the final rule that show that even lower post-intervention dust-lead loadings could be achieved, EPA would consider establishing a more stringent dust-lead hazard standard. A number of comments were submitted claiming that cleanup could be achieved below 40 μg/ft². Of particular relevance were comments from HUD stating that, in its experience, cleaning to levels below 40 μg/ft² was typically achieved as evidenced by its Grantees program. In fact, since the proposal of this rule, HUD has promulgated a 40 μg/ft² standard for floors in its 1012/1013 regulations. Since EPA's basis for not considering a standard less than 50 μg/ft² was based upon its understanding of the effectiveness of cleaning and, based upon the data provided by HUD in its comments, it is now clear that a 40 μg/ft² standard is achievable, the Agency is establishing 40 μg/ft² as the dust-lead hazard standard for floors. The Agency believes that this is consistent with the approach taken in its proposal namely, that the floor-dust hazard standard should be at the lower end of the range where risk reduction is possible. Further, when considered in terms of its cost-benefit analysis, EPA found that indeed positive net benefits resulted for the 40 μg/ft² hazard standard. In fact, as compared to the proposed standard of 50 μg/ft² with a sill dust standard of 250 μg/ft² (see Tables 2 and 4), net benefits are somewhat higher under the IEUBK model-based analysis and approximately the same under the Empirical model-based analysis.

EPA does not believe it is appropriate to set a dust-lead hazard below this level for the additional reason that such a level would significantly increase the number of homes identified as lead hazards and would not likely identify more truly hazardous environments. This is based on the fact that these lower levels would identify significantly more than the approximately 22 million homes that are identified as having dust-lead hazards under the 40 μg/ft² standard. In view of the fact that there are far less children in the population with elevated blood lead levels, EPA has to question modeling results that would suggest such lower levels.

ii. *Carpeted floors.* In contrast to the proposed standards that only applied to uncarpeted floors, EPA has decided to include carpeted floors in the dust-lead hazard standard, and the clearance standards. EPA's reasoning is explained herein.

The Agency received substantial comment on the issue of the floor dust standard, and its proposed limitation to uncarpeted floors. As discussed in the preamble for the proposed rule (63 FR 30336), EPA did not include dust standards for carpeted floors because the Agency was unaware of adequate data that could be used to establish a statistical relationship between dust lead on carpeted floors and children's blood-lead concentrations. In the absence of such relationship, EPA felt it could not estimate the level of risk and risk reduction that would be associated with various levels of dust-lead in carpeted floors. Furthermore, EPA did not believe it had adequate data on the effectiveness of carpet cleaning that would be needed to establish a dust clearance level for carpeted floors. EPA did state that it planned to analyze expeditiously any newly available data to establish dust standards on carpeted floors and to amend the regulations to add standards for carpeted floors.

EPA, however, acknowledged that the lack of standards for carpeted floors was a significant limitation of the proposal. Accordingly, the Agency requested comment on the impact of not including standards for carpeted floors and indicated it would be interested in any information or data that would help it establish such standards.

Almost all comments on this issue disagreed with EPA's decision not to set carpet standards, even though many recognized that the lack of data on hazardous levels of lead in carpets makes it difficult for EPA to establish a dust-lead standard for carpeted floors. However, by excluding carpet dust from the dust hazard standard EPA will cause excessive amounts of lead to be ignored during dust-lead control activities. Many children who live in homes with wall-to-wall carpeting will remain unprotected from floor dust-lead hazards. Using data from the 1997 American Housing Survey, EPA estimates that approximately 54 million housing units built prior to 1978 contain some wall-to-wall carpeting. Of these units, wall-to-wall carpeting is found in a living room in approximately 47 million units and in a bedroom in approximately 46 million units (i.e., rooms in which children reside and play most frequently.

A number of comments pointed out the unintended consequences of not having a dust-lead standard for carpets. Contractors complained that, because abatement requires quality control standards in order to be properly executed, many contractors will refuse to work in rooms where there is no standard on which they can fall back to show they have done their work correctly. This could raise liability issues because there would be no standard to determine whether it is safe for a family to return to a home after a lead cleanup. Not having a carpet standard could create the notion that, if carpet remains, there is no hazard on the floors and the carpeted floor can be ignored. Further, a property owner could avoid having to meet clearance levels for lead dust on floors simply by laying carpet.

In view of the substantial loophole that could be created in the absence of a standard for carpeted floors, many comments recommended that EPA

should maintain one standard for all floors until research can be done that supports a different standard for carpeted floors. The Agency is persuaded by the comments that the absence of any standard at this time would potentially lead to significant exposures for children, and that some standard is necessary at this time.

In response to these concerns, the Agency has reviewed the information submitted by commenters and other information in its rulemaking record, including the data base supporting the floor dust-lead standard. EPA agrees with the comments that the huge potential loophole created by not having a carpet standard could affect large numbers of children and would be inappropriate. It is known that carpeting can be a dust reservoir with significant amounts of lead. In addition, the Agency believes that its rulemaking record supports setting a carpet standard that is the same as the standard for bare floors.

Specifically, EPA finds that the following information supports setting a carpet standard that is the same as the bare floor standard. First, EPA agrees with the comments, particularly with respect to the fact that substantial amounts of children would remain unprotected by not having a carpet standard and that the consequences are harmful to public health.

With respect to data, EPA has examined its analysis that supported the dust-lead hazard standard. That analysis not only supports the standard for bare floors, but also the same one for carpeted floors. This is because the data that was used as input to its models did not distinguish between bare floors and carpeted floors. That is, the Agency's risk analysis, its analysis of risk reduction that could be achieved through cleanup, and the cost-benefit analysis for floors evaluated both carpeted and uncarpeted floors. EPA cannot definitively state that, in fact, all factors will be the same for both carpeted and uncarpeted floors, but sufficient evidence exists to establish a carpet standard. This is based upon considering the potential loophole that could exist in the absence of a carpet standard and the fact that some correlation exists between carpeted and non-carpeted floors.

The correlation between carpeted and non-carpeted floors is supported by data in the rulemaking record, as well as data submitted by HUD in comment. These data include the Rochester (NY) Lead-in-Dust study and the pre-intervention, evaluation phase of the HUD Lead-Based Paint Hazard Control Grant (''HUD Grantees'') Program (data collected through September 1997), both of which appear in the record for this rulemaking and are described in the Risk Analysis for the proposed rule. The Rochester Study shows a significant correlation between dust lead in carpets and children's blood lead. Further, the study showed that the percentage of children with blood-lead levels above 10 μg/dL were nearly the same with carpeted and uncarpeted floors (19.8 and 18%, respectively). This correlation supports setting at least the same standard for carpeted and non-carpeted floors. In addition, data from the HUD Grantees indicate that grantees were able to reduce dust-lead loadings in carpets, although the data are limited by the fact that grantees were working with higher clearance standards (80 - 200 μg/ft^2 instead of 40 μg/ft^2). Nevertheless, the fact is that the identical cleaning techniques were used, regardless of the clearance standard. Finally, there are no scientific data available demonstrating that carpeted floors pose different risks to children than any other type of flooring.

Accordingly, EPA's dust-lead, hazard and clearance standards apply to all floors. This will ensure that children are protected from dust hazards on all types of floors until future rulemakings can more definitively evaluate the need for different carpet standards.

iii. *Sampling requirements related to assessing dust-lead hazards.* EPA is adopting the sampling location (63 FR 30342) and interpretation (63 FR 30339—30340) requirements based on the rationale in the proposed rule. This regulation amends the work practice standards for risk assessments at 40 CFR 745.227 to require risk assessors, for purposes of hazard assessment, to take samples from floors and interior window sills. This regulation also amends the work practice standards to require risk assessors to make the dust-lead hazard determination by comparing the average of wipe sample results, weighted by the number of subsamples in each sample to the hazard standard for the appropriate surface (i.e., floors, sills) For multifamily properties, the risk assessor will determine that unsampled units of particular type of surface (i.e., floors, sills) constitute a hazard if at least one sampled unit is determined to be a hazard. Unsampled common areas are presumed to contain a lead-based hazard if at least one sampled common area of a similar type contains a lead-based hazard.

iv. *Dust clearance standards.* EPA is explaining in this section its reasoning for establishing clearance standards for cleanup of lead dust hazards and work practice standards for interpreting composite samples for clearance purposes.

Clearance standards are used by certified individuals to evaluate the adequacy of the cleanup performed in residences at the completion of abatement. According to the practices prescribed at 40 CFR 745.227, a certified risk assessor or inspector must collect dust samples and have them analyzed by an EPA-recognized laboratory following the cleanup to assure that the cleanup reduces dust-lead levels to prescribed ''clearance'' levels. If the clearance levels are not met, the cleanup and testing process must be repeated until the clearance standards are met. Although clearance testing is not required following implementation of interim controls (e.g., paint repair), the Agency strongly recommends such testing to ensure that the residence has been adequately cleaned.

With respect to composite sampling, the work practice standards at 40 CFR 745.227 do not differentiate between single surface samples and composite samples for determining compliance with clearance standards. EPA recognizes that because composite samples provide an average level of lead, low values on some surfaces may mask the presence of lead levels that exceed clearance standards on other surfaces. EPA continues to believe, however, that composite sampling is a useful tool for risk assessment and clearance and wishes to preserve its use under the regulations, the Agency proposed a method to remedy this problem and discussed various related issues in the preamble to the proposal (63 FR 30342).

A. Clearance standards for floors and sills. The final regulation contains clearance standards for floors and interior window sills of 40 μg/ft^2 and 250 μg/ft^2 respectively. This change from 50 μg/ft^2 to 40 μg/ft^2 accounts for the Agency's decisions to include standards for carpets as well as bare floors and to lower the dust lead hazard standard, as discussed earlier in this preamble.

The preamble to the proposed rule (63 FR 30341) discusses the statutory requirements applicable to clearance standards in TSCA section 402. On the same page, EPA provides the reasoning supporting the Agency's decision to use the same level to define clearance standards for dust as is used to define dust hazard standards for floors and interior window sills. This section of the proposal also explains how the Agency considered available field data documenting experience with the HUD cleaning protocol and decided to propose clearance standards that are the

same as the dust-lead hazard standard. These portions of the preamble to the proposed rule are adopted as support for the final clearance standards in this rule.

B. Clearance standard for window troughs. For window troughs, where EPA is not issuing a hazard standard, the Agency has decided to issue a clearance standard of 400 μg/ft². This is a change from the proposal, where EPA proposed to adopt the then-existing clearance standard of 800 μg/ft² from HUD's guidance.

The decision is based on EPA's consideration of public comments, and other information available to the Agency, which suggested that 400 μg/ft² is an appropriate clearance standard for window troughs. In the proposal, EPA used the current HUD clearance level for troughs (800 μg/ft²). As a result of the public comments, EPA revisited the data from the Agency's clearance evaluation, which clearly demonstrates that the 400 μg/ft² level is achievable without a major increase in burden. In six of the eight studies the pass rate for 400 μg/ft² after one trough clearance test ranged from 80.3% to 93.6%. The corresponding range for 800 μg/ft² is 88.4% to 96.6%. Two of the studies had significantly lower pass rates at 400 μg/ft² (30.6% and 53%). These studies, however, also had lower significantly lower pass rates at 800 μg/ft² (43.5% and 62.9%).

C. Sampling location and interpretation of composite dust samples. EPA is adopting the amendments to the sampling location requirements in the abatement work practice standards at 40 CFR 745.227 discussed in the proposed rule. This amendment changes sampling locations from uncarpeted floors and windows to all floors, interior window sills, and window troughs. This change is needed because the EPA is establishing clearance standards for all floors, including carpeted floors, and specific window surfaces.

To remedy the problem that composite samples may mask the presence of lead levels that exceed clearance standards, EPA proposed to require a risk assessor to divide the clearance standard by the number of subsamples in the composite. For example, if a composite floor sample of 50 μg/ft² contained four subsamples, the risk assessor would compare the loading from the composite sample to 12.5 μg/ft² (i.e., the proposed floor clearance standard divided by four). Using this approach, it was mathematically impossible for the composite to pass when any single subsample exceeds the 50 μg/ft² proposed clearance standard for floors. It would have, however, introduced the possibility of a composite sample failing clearance even if all the subsamples would have passed clearance individually (i.e., false failure), leading to additional clean up activities that would not have been necessary. At the time of the proposal EPA decided that this method would provide the best balance of safety, effectiveness, and reliability (63 FR 30342). EPA specifically asked for comment on this approach.

Commenters objected to this approach for several reasons. The most persuasive is that this approach would create a significant disincentive for risk assessors to use composite testing. HUD specifically referred to a study by Scott Clark and Paul Succop which showed that a better approach would be to compare the composite sample to the clearance levels divided by half the number of subsamples. Clark's and Succop's data shows that this approach produces an equivalent rate of passing clearance as single surface sampling.

Upon review of this study, EPA has decided to adopt this approach and is amending the work practice standards at 40 CFR 745.227 accordingly. Although the Agency prefers single surface sampling, it does not want to create a disincentive to conduct composite testing since in some circumstances it can save time and money. By selecting an approach that judges composite samples and single surface samples in an equivalent manner, EPA is removing the disincentive that the proposed approach would have created.

b. *Soil.* This section of the preamble presents EPA's decisions regarding the soil lead hazard standards. It addresses the soil-lead hazard standards for children's play areas and the remainder of the yard, and management controls for soil removed during an abatement:

i. *Soil hazard standard.* For the final regulation, EPA has selected 400 ppm in bare soil as the hazard standard for children's play areas and is an average of 1,200 ppm as the soil-lead hazard standard for the remainder of the yard. EPA's decision is a change from the proposed standard of 2,000 ppm as a yard-wide standard.

EPA's reasoning in support of the 2,000 ppm yard-wide standard is explained in the preamble to the proposed rule (63 FR at 30328–30330). To determine the final soil hazard, EPA uses the same underlying legal and policy rationale in the proposal. The Agency, however, now believes it is more protective of children and still consistent with the legal and policy bases to establish a lower level that focuses on children's play areas, as well as a lower level for the remainder of the yard.

EPA did not identify new information that has a significant bearing on the decisions needed for this rule and indeed is using the same references cited in support of the proposed soil hazard standard, to support this final decision. Comments on the proposal that questioned whether the proposed standard would be adequately protective of children, however, did cause the Agency to rethink its approach in reviewing the results of the analysis and the assessment of the available options. During this reevaluation of the options, EPA considered all options from 400 ppm to 5,000 ppm and selected the most protective option that could be supported by the analysis. This section presents EPA's rationale for selecting 400 ppm for children's play areas and 1,200 ppm for the remainder of the yard as the hazard standards and for not choosing the other options. Detailed responses to comments on all the options are found in the RTC document.

In order for the public to understand EPA's reasoning for the final soil hazard levels, the Agency believes it is necessary to review its reasons for not selecting the lowest and highest levels under consideration (400 and 5,000 ppm yard-wide averages, respectively), the reasons for proposing 2, 000 ppm instead of 1,200 ppm as yard-wide standards, and the reasons for choosing 1,200 ppm in the nonplay areas as the final soil hazard standard. This discussion will also show where the final analysis is consistent with the proposal and where divergence from the proposed reasoning is appropriate.

The proposal explained that, to arrive at a soil-lead hazard level, EPA sought to determine, with consideration of the uncertainty of the scientific evidence regarding environmental lead levels at which health effects would result, those conditions for which the Agency had sufficient confidence in the likelihood of harm that abatement seemed warranted to achieve the associated level of risk reduction. This is the method EPA has used to arrive at standards for both dust and soil. The Agency has determined that this is an appropriate way under the statute to determine whether a dust or soil lead ''would result'' in adverse human health effects. EPA has followed a similar approach in examining the final decision, although it has reached a different conclusion with respect to choosing the levels.

In the proposal, EPA rejected options for both higher and lower soil lead levels for a number of reasons. While, at

the time the Agency was only considering a yard-wide standard, those reasons are still relevant to today's final decision. However, the Agency's reasons for not selecting the extremes of either 400 ppm and 5,000 ppm, as a yard-wide standard, were of a more serious nature than its reasons for not choosing of 1,200 ppm. For this final rule, EPA reaffirms the reasoning in the proposal for not selecting the 400 ppm and 5,000 ppm standards, as yard-wide standards, with additional explanations noted below.

With respect to not choosing the 400 ppm level as a yard-wide standard, EPA acknowledged in the preamble to the proposed rule that the results of the IEUBK model-based analysis at relatively low soil-lead concentrations are dependent upon modeling assumptions that are sensitive to local conditions, for example the transport of outdoor soil into a residence. Although the IEUBK model predicts substantial benefits resulting from abatement at higher soil-lead levels, the absence of site-specific information at lower soil-lead levels increases the uncertainty in the public health protection that should be expected. Consequently, EPA does not believe that, as a uniform national soil-lead standard, a value as low as 400 ppm yard-wide represents a reasonable public policy choice. Also, much of the benefit that the IEUBK model-based cost-benefit analysis predicts is very sensitive to certain of the data and assumptions used therein. For example, a significant proportion of these benefits are associated with changes in dust concentration, which are affected by both the HUD National Survey data and EPA's assumptions about post-intervention dust concentrations.

Second, EPA's Empirical-based model cost-benefit analysis has an even greater difference with the IEUBK cost-benefit results with respect to the risk reduction achievable at soil-lead concentrations as low as 400 ppm yard wide. Had the Empirical-based analysis yielded results more similar to the results of the IEUBK model-based approach, EPA would have greater confidence that significant risk reduction is achievable at soil-lead concentrations between 400 ppm and 1,200 ppm as yard-wide standards for most properties.

In addition, EPA considered that, at lower levels, interim controls would be of greater help in reducing risks than at higher levels. While EPA lacks published studies to estimate the effectiveness of these controls, it seems reasonable that interim controls can interfere with exposure pathways and reduce risk. Flexibility to use these measures may aid in taking cost-effective measures where appropriate. EPA, however, was not able at the time of the proposal, and still is not able, to quantify the benefits of interim controls.

The Agency notes that HUD, provided data on interior dust lead measurements at homes where soil interim controls had been instituted. These data included average costs of some interim control strategies and dust measurements approximately 2 years after the controls were implemented. While these data were not used in the risk analyses that support this rule, they were examined in sensitivity analyses that are contained in the Economic Analysis for today's rule (Ref. 14).

An additional reason that supports not using 400 ppm as the yard-wide soil-lead hazard standard is provided by a number of commenters arguing that 400 ppm should be the hazard standard, but that abatement should not occur until 5,000 and interim controls are more appropriate at 400 ppm. These comments come from a number of advocacy groups and State and local governments who are experienced in dealing with abatement issues. EPA disagrees with these comments, for reasons discussed in more detail later in this preamble, because the Agency has decided to base the hazard standards on the lowest levels at which its technical analysis shows that across-the-board abatement on a national level could be justified. Nevertheless, these comments by persons experienced in dealing with control of lead problems, in effect, provide additional support for the Agency's determination that 400 ppm should not be a yard-wide hazard under EPA's methodology for choosing the hazard standards (i.e., that 400 ppm should not be an across-the-board abatement level).

EPA also fears that by calling 400 ppm yard-wide a hazard, property owners and other decision makers would undertake abatements as the automatic response. A value of 400 ppm is below the level at which EPA believes that across-the-board yard-wide abatement and its associated expenditure of resources are justified and at that level could divert resources from potentially riskier sources of lead exposure--namely deteriorated lead-based paint and dust-lead hazards.

EPA also was concerned that more stringent standards would not meet the priority-setting goals the Agency believes are appropriate for the Title X program. Of particular concern was the fact that the Agency estimates that over 12 million homes would exceed a 400 ppm yard-wide standard. Scarce resources potentially would have to be allocated across more communities and would be diverted away from interventions needed to respond to both deteriorated interior and exterior lead-based paint.

With respect to the not choosing a level of 5,000 ppm as the hazard standard, EPA found that while costs may be lower at that level, the IEUBK model-based approach shows that net benefits also decrease by $ 32 billion when increasing the standard from 2,000 ppm to 5,000 ppm. While the empirical model-based approach shows that net benefits are about the same for both options, the benefits decline by $9 billion when the standard increases from 2,000 ppm to 5,000 ppm. Thus, the absolute benefits at 2,000 ppm are substantially higher.

As discussed in the preamble to the proposed rule, however, the difference between 1,200 ppm and 2,000 ppm as the yard-wide standard was a closer call. While 2,000 ppm was justified by both the IEUBK and the Empirical model based analysis, there still was concern for substantial risk at 1,200 ppm. At 1,200 ppm in soil, the IEUBK model estimates a mean blood lead level in the range of 8 to 11 μg/dL. This range of mean blood-lead concentrations corresponds to a range of approximately 30 to 60% exceeding 10 μg/dL and 2 to 10% exceeding 20 μg/dL. In addition, there is a much smaller difference in homes affected when comparing the 2,000 ppm and 1,200 ppm standards as opposed to comparing 2,000 ppm with 400 ppm. At 1,200 ppm, 4.7 million homes would exceed the standard.

EPA decided to propose 2,000 ppm for several reasons. Readers are referred to the preamble to the proposed rule for details. First, the results of the empirical model-based normative analysis showed that net benefits are positive and near the maximum level at 2,000 ppm. The IEUBK normative model-based analysis showed positive and significantly higher net benefits at concentrations up to 2,000 ppm than for soil-lead concentrations above 2,000 ppm. Because both analyses showed positive net benefits at 2,000 ppm, EPA was confident that this level represented a reasonable public health policy choice.

The second reason EPA gave in the proposal for choosing 2,000 ppm was that, outside of its use in the economics model, the IEUBK model predicts significant risk to children at that soil-lead concentration under virtually all exposure scenarios. At 2,000 ppm in soil, the model estimates a mean blood lead level in the range of 11–16 μg/dL, depending upon the assumed concentration of lead in house dust (100–1,400 ppm in this case). This range corresponds to approximately 55 to 80%

equal to or exceeding 10 μg/dL and 9 to 30% exceeding 20 μg/dL. Although this is greater than empirical data, the Agency believes that this application of the IEUBK model supports the conclusion that a level of 2,000 ppm would result in adverse effects.

The third reason given in the proposed preamble to support the 2,000 ppm soil hazard level was that data from a number of epidemiological studies show that between 40 and 50% of the children living in certain communities with soil-lead concentrations at the 2,000 ppm level have blood-lead concentrations equal to or exceeding 10 μg/dL and that 10% of children have blood-lead concentrations equal to or exceeding 20 μg/dL.

However, there are several limitations associated with the above analysis. First, the results are based on a single media analysis, i.e., the estimated percent of children with elevated blood-lead concentration considered only the level of lead in soil and did not control for the contribution of lead from other media to blood lead level. Second, studies were conducted over a period of time between 1979 and 1996 and the study duration varied from a couple of months to several years. Third, the studies were conducted in different geographical regions. Some of the studies were performed in the vicinity of smelters (active or inactive) or in ore processing communities. Fourth, the target populations were different among the studies (i.e., targeting children with 5-20 μg/dL blood-lead concentration, high-risks neighborhoods, homes with a lead-poisoned child, children in a certain age group).

In the proposal, EPA decided not to use as its preferred option the more stringent soil-lead hazard standard. While EPA interpreted the balancing of costs and benefits under IEUBK model-based analysis as showing costs would be at least commensurate with risks at 1,200 ppm, the results of the empirical model-based approach suggested they might not be. In addition, some epidemiological data indicated substantial risks even at 1,200 ppm. Because the Agency's analysis, thus, showed that at the national level costs may not be commensurate with risk reduction at the lower level. EPA decided to propose the higher level because it ''was mindful of the impacts that the costs of soil abatement could have on individual properties and communities.'' (63 FR 30330) This was notwithstanding the fact that some epidemiological data indicated substantial risks even at 1,200 ppm. Ultimately, therefore, the consideration of costs and their impacts was the primary reason why EPA proposed 2,000 ppm as opposed to 1,200 ppm.

At the time of the proposal, the Agency also expected that measures undertaken in response to the proposed soil-lead level of concern in guidance and dust hazard standards would help protect children exposed to soil-lead concentrations at all levels below 2,000 ppm.

EPA received numerous comments on the proposed standard which provided a broad range of perspectives but no clear consensus. Comments that questioned whether the proposed standard would be adequately protective of children did cause the Agency to rethink its approach in reviewing the results of the analysis and the assessment of the available options. While EPA did not choose the options at the extremes, the Agency's principal dilemma as it considered comments on the proposed rule was to consider whether it should retain 2,000 ppm as the soil hazard standard or move to 1,200 ppm. EPA also received many comments that it should establish a separate play area standard. The Agency has resolved these problems, for the final rule, by establishing a 400 ppm standard for children's play areas and an average of 1,200 ppm standard in the remainder of the yard. The following discussion presents EPA's rationale for selecting 400 ppm as a children's play area standard and for selecting 1,200 ppm as the hazard standard for the remainder of the yard and for not choosing 2,000 ppm.

A. Play area hazard standard. As explained above, EPA's proposal was to establish a single hazard standard that would be used for the entire yard. Many comments were received on this approach that were highly critical of the Agency for not treating the play area separately from the rest of the yard. These commenters reasoned that the play area is where children receive a significant proportion of their exposure to soil and that, therefore, the Agency should establish a more stringent standard for play areas. The Agency is persuaded by these comments and has reconsidered its treatment of play areas.

The Agency's initial reluctance to considering a separate standard for play areas was the concern that play areas could not be readily distinguished from the remainder of the yard. Among the comments that urged the Agency to consider a separate standard were comments from local public health agencies stating that risk assessors can readily identify play areas, thus making EPA's primary objection to this approach (feasibility), moot. Given that, in responding to these comments, the Agency, consistent with the interpretation that was stated in its proposal, focused upon the condition and location of lead in soil that would result in adverse health effects. As opposed to assuming equivalent exposure from all areas of the yard, the Agency agrees that it is also appropriate to consider that the extent of exposure and the potential for risk reduction is much greater in play areas. Consequently, because of the high levels of exposure that almost by definition correspond to a ''play area,'' the Agency believes it appropriate to consider 400 ppm to be a soil-lead hazard when that soil is situated in a child's play area.

The Agency's next step was to attempt to estimate how a separate play area standard would affect the risk reduction that would result from various other standards (e.g., 1,200 ppm and 2,000 ppm) in the rest of the yard. The Agency tried various options to partition children's expected exposures from soil in play areas and soil in the rest of the yard. This posed numerous problems, which will be described later in this section, but it did indicate that an approach which focuses primarily upon a child's play area would likely be preferable in terms of protectiveness, risk reduction, and cost-effectiveness.

In its analysis, the Agency considered two options for the degree of exposure: (1) That 50% of exposure is from play area soil and 50% is from soil in the rest of the yard; and (2) that 2/3 of the exposure is from play area soil and 1/3 is from soil in the rest of the yard. The Agency coupled these exposure assumptions with two assumptions regarding the relative size of the play area: (1) That 10% of the yard is the play area (''small yard''); and (2) that 50% of the yard is the play area. These analyses indicated that, in situations where the play area is small, an approach which establishes a more stringent standard for the play area can be more optimal in terms of cost effectiveness (and obviously more protective) than a less stringent standard applied to the yard as a whole.

For example, in the ''small yard'' case where exposure is assumed to be 50% from the play area and 50% from the rest of the yard, the consequences of moving from a yard-wide average standard of 1,200 ppm to standards of 400 ppm for the play area and 1,200 ppm for the rest of the yard are as follows: total costs are increased slightly from $68.9 to $70.4 million while total benefits increase from $159.3 to $174.2 million, using the IEUBK model. This results in an increase in net benefits from $90.4 to $103.8 million. Using the Empirical model, this analysis produces

the same trend, although the results are less dramatic, indicating an increase in net benefits of $1.4 million. The results of these analyses confirm that the establishment of a separate, more stringent standard for play areas can constitute a more targeted, more protective, and more cost-effective approach, especially where play areas are not large.

As noted above, while the Agency believes that these analyses are indicative of the benefits of separate standards for the play area and the rest of the yard, there are a number of technical problems associated with such analyses. First, the amount of direct exposure to soil that children experience in their play areas versus the rest of their yard has not been studied to any significant degree. A further complication is the fact that there is little or no data on the actual, or even relative, sizes of play areas. Additionally, the soil in the rest of the yard can re-contaminate play areas where interventions have previously occurred. For these reasons, the Agency was unable to develop definitive estimates of risk and available risk reduction for separate standards for the play area and the rest of a yard.

The Agency believes that these analyses serve to demonstrate that, to the extent to which children's exposure to soil is greater in a play area and the size of the play area is smaller compared to the rest of a yard, greater risk reduction (and at a lower cost) would be achieved with a separate standard for a play area and a different standard for the rest of the yard (as opposed to applying a single standard to the entire yard). Consequently, the Agency believes that establishment of a more stringent standard for the play area will be more cost-effective as well as more protective of children.

B. Remainder of yard hazard standard. EPA believes that, based on the technical analysis, either an average of 1,200 ppm or 2,000 ppm level could be chosen under the applicable statutory criteria that the conditions of lead-contaminated soil would result in adverse health effects. EPA chose 1,200 ppm for the final rule because it is the most protective level at which EPA has confidence that the risks warrant abatement.

EPA's most basic reason for choosing 1,200 ppm over 2,000 ppm is that the IEUBK model estimates that an individual child would have a 30 to 60% risk of having a blood lead level equaling or exceeding 10 µg/dL, and that some epidemiological data indicated substantial risk at 1,200 ppm. EPA recognizes that this is an overestimate because it was derived without consideration of a play area. EPA recognizes that with separate consideration of a play area, the overall individual risks will likely be lower. It is also important to note that the epidemiological data referred to as indicating substantial risk at 1,200 ppm is the same data, and subject to these same caveats as are discussed in the soil hazard standard section. Also, the Agency notes that abatement at levels above 1,200 ppm have been shown to result in declines in childrens' blood-lead levels. For example, in evaluating the Boston portion of the Urban Soil Lead Abatement Demonstration Project (Ref. 17), the Agency found that:

> ... the abatement of soil in the Boston study resulted in a measurable, statistically significant decline in blood lead concentrations in children, and this decline continued for at least two years. It appears that the following conditions were present, and perhaps necessary for this effect: (a) a notably elevated starting soil lead concentration (e.g., in excess of 1,000 to 2,000 ug/g (ppm)); (a marked reduction of more than 1,100 ug/g in soil lead consequent to soil abatement accompanied by (c) a parallel marked and persisting decrease in house dust lead.

None of these factors, alone, would lead to choosing 1,200 ppm. When combined with the range of uncertainty in either of the cost-benefit analyses, however, the support of the IEUBK cost-benefit analysis, and the nearness to the empirical-based model analysis that would support the 2,000 ppm standard, these factors tip the balance towards the lower of the two levels.

EPA finds national data are not inconsistent with the IEUBK individual risk analysis. EPA estimates, based on the HUD National Survey Data that 4.7 million homes have soil-lead levels that exceed 1,200 ppm. Of these 4.7 million homes, an estimated 830,000 would be occupied by children under the age of 6 (based on the estimate from the 1993 American Housing Survey that 17.6% of homes are occupied by children under the age of 6). According to the IEUBK prediction, elevated blood lead levels due to lead in soil exceeding 1,200 ppm could be found in 30% of these children (based on the lower end of the IEUBK predicted individual range, without consideration of the play area standard), about 250,000 children. Since over 900,000 children, nationwide, have elevated blood-lead levels EPA finds it credible that soil-lead could be a factor in these childrens's blood levels.

EPA decided not to select its proposed choice for the soil-lead hazard standard, 2,000 ppm, for several reasons. First, the Agency's analysis shows that there is substantial and credible risk at soil-lead concentrations below this level. Second, significant risk reduction is possible below this level.

In making its decision, EPA was mindful of the concerns associated with lowering the soil standard from 2,000 ppm to 1,200 ppm. By picking a more stringent hazard standard, EPA increases the estimated number of homes that are potentially affected by 2.2 million. Abatement costs may also divert resources from efforts to control exposure from deteriorated paint and dust which are possibly more significant sources of exposure.

Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. EPA received comments on this issue during the public comment process. EPA wishes to encourage the continuing evaluation of such efforts because resources to deal with hazardous lead levels may be very limited, and strategies which achieve comparable risk reduction, but at much reduced cost, have the potential to protect more children by allocating the limited resources more effectively. Recognizing that a site-specific evaluation may identify unacceptable risks to children, it may be necessary to take a more rigorous approach to mitigate those risks as the lead-levels increase. EPA believes that public and private organizations should evaluate both interim control and abatement strategies in determining the most effective course of action when dealing with dust and soil hazards.

C. De minimis area of bare soil. In the proposal, EPA considered whether the rule should include a minimum (i.e., *de minimis*) area of bare soil as part of the lead hazard criteria. 63 FR 30337-8. The Agency rejected inclusion of a *de minimis* area of bare soil for the hazard standard, but did request comment on two other options. Under one of the other options, EPA would adopt the *de minimis* area from the HUD Guidelines, which instruct risk assessors to sample yards that have at least 9 square feet of bare soil, with no *de minimis* in the play area. HUD's final rule under section 1012/1013 of Title X incorporates this into its interim soil lead hazard standard. That is, a hazard does not exist where there are less than 9 square feet of bare soil outside the play area.

EPA still rejects including a *de minimis* area of bare soil for the hazard standard for the same reasons stated in

the proposal. EPA's reasoning is that the disadvantages of establishing a *de minimis* outweighed the advantages. EPA has no analysis or data that relate the amount of bare soil to risk. EPA also believes that a *de minimis* area of bare soil provides little benefit. First, information provided by an experienced risk assessor suggests that very few properties would be excluded using the *de minimis* in the HUD Guidelines. Second, the incremental cost of including soil testing in a risk assessment is small. Moreover, the *de minimis* used in the HUD Guidelines does not account for differences in yard size. Outside of the play area, 9 square feet may be insignificant in a suburban yard but large for the back yard of an urban row house.

However, EPA highly recommends using the HUD Guidelines for risk assessment (Ref. 5). This would avoid declaring very small amounts of soil to be a hazard in the non-play areas of the yard. This would also help target resources by eliminating the need to evaluate soil or respond to contamination or hazards for properties where there is only a small amount of bare soil.

D. Management of removed soil. EPA is adopting the proposed requirement for management of soil removed during an abatement (63 FR 30343). This requirement prohibits the use of soil removed during abatement as topsoil in another residential property or child-occupied facility. In response to comment, EPA would like to clarify that applicable Federal and State requirements apply to removed soil including testing pursuant to RCRA under the Toxicity Characteristic Leaching Procedure and disposal of soil identified as hazardous waste (Ref. ?). The Agency also advises that care should always be taken to ensure that removed soil does not pose immediate or future risks to human health. For example, it should not be disposed of at an undeveloped site that may later be developed as residential or converted into a playground.

c. *Paint.* This section of the preamble presents EPA's decisions regarding the standards for hazardous lead-based paint. It addresses the deteriorated paint, paint on friction and impact surfaces, and surfaces accessible for chewing or mouthing by young children. This section also discusses relevant amendments to sampling requirements.

i. *Deteriorated paint.* The final regulation adopts the Agency's underlying rationale in the preamble to the proposed rule for setting the hazard standard for deteriorated paint. Specifically, EPA reaffirms its argument in the preamble to the proposed rule (63 FR at 30330–30331) that the available evidence demonstrates a relationship between deteriorated lead-based paint and blood-lead. Due to the continuing lack of data, however, EPA is still unable to definitively select an area threshold below which the lead-based paint would not be a hazard. Further, EPA has received substantial public comments that even very tiny amounts of deteriorated paint can cause harm and should be addressed. As a result, the Agency has reevaluated its rulemaking record and no longer believes it is appropriate to have a threshold level of deteriorated lead-based paint below which a paint-lead hazard does not exist.

Accordingly, EPA has decided to identify as the paint-lead hazard any deteriorated lead-based paint, except in the case of friction surfaces. For friction surfaces, as noted below, a paint-lead hazard may exist if the surface is subject to abrasion and dust lead levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the dust hazard levels.

Furthermore, EPA has decided that it was not appropriate to refer to any area threshold for deteriorated lead-based paint as a *de minimis* threshold. Using this terminology gives the public the perception that the Agency believes risks at lower levels of deterioration are inconsequential and that no action should be taken.

While establishing this paint-lead hazard standard would alert the public to the fact that all deteriorated paint needs to be addressed, EPA acknowledges that paint stabilization or interim controls (activities less than abatement) would often be appropriate to address paint, particularly at lower levels of deterioration or where the deterioration is minor, such as less than: Two square feet of deteriorated lead-based paint per room; 20 square feet of deteriorated exterior lead-based paint; or 10% or less of deteriorated paint on the total surface area of an interior or exterior type of component with small surface area. EPA, further, emphasizes that applicable HUD and EPA regulations do have area threshold exemptions for various work practice standards, clearance, and certification requirements.

A. Comparison of proposed and final rules. EPA proposed to adopt as the paint hazard threshold levels those levels identified in the 1995 HUD Guidelines that defined paint in poor condition. These levels were ''component based.'' That is, there were more than 2 square feet of deteriorated lead-based paint on any large interior architectural component (e.g., floors, walls, ceilings, doors, etc.), more than ten square feet of deteriorated lead-based paint on any large exterior architectural component (e.g., siding), or deteriorated lead-based paint on more than 10% of the surface area of any small architectural component (such as window sills and baseboards). Under HUD's Guidelines no action was required for paint with lesser amounts of deterioration.

The Agency proposed using the criteria in the HUD Guidelines because they were becoming the de facto industry standard that was being considered for incorporation into model housing and building codes and by State officials for adoption as State standards. In addition, EPA decided that relatively small thresholds are needed to be protective, because the area of deterioration has the potential to increase over time and because the presence of even small amounts of deterioration can present a significant risk to children who exhibit pica for paint. EPA also noted that with an area threshold level in place, millions of homes would not be identified as having hazardous paint and that this would reduce the number of paint abatements while still providing protection to the populations of concern. Nevertheless, the preamble to the proposal emphasized that while areas of deteriorated paint that fall below the threshold would not be considered a hazard, property owners should try to keep paint intact, especially paint known to be lead-based, because of the risk to some children.

EPA received numerous comments on the issue of the area threshold. Comments varied from those that argued that all lead-based paint, regardless of condition, should be a hazard to those that argued the Agency should have no separate paint standard but should rely on the dust and soil standards. Comments in between recommended such standards as all deteriorated paint should be a hazard, or that the area thresholds should be lower or more clearly explained. As a result of considering the comments and all other information available in the rulemaking record, EPA is issuing a final rule that generally provides that any deteriorated lead-based paint would be identified as a hazard. Below, EPA explains its final decision. Detailed responses to all significant comments are found in the RTC document.

While there were no comments that could directly quantify the relationship between deteriorated paint and blood lead levels, two comments attempted a

very rough quantification that EPA can use for limited support for its determination that any deteriorated lead-based paint is a paint-lead hazard. One comment cited an analysis by the Consumer Product Safety Commission (CPSC) suggesting that very small areas of deteriorated lead-based paint could present hazard to young children. According to this analysis, chronic ingestion of lead from paint and other consumer products should not exceed 15 ug/day to prevent a young child from having a blood lead levels that exceeds 10 µg/dL. Assuming a 30% absorption rate and and paint with 0.5% lead by weight, this analysis estimates that a child would have to ingest as little as 6 square inches of paint over a month to have an elevated blood lead level. Another comment submitted a theoretical calculation that the proposed standard for the dust lead hazard of 50 µg/ft^2 would be exceeded if only one square centimeter of lead-based paint with a concentration of 4 mg/cm^2 were ground into dust and evenly distributed in an eight by ten foot room. Other commenters presented anecdotal evidence that children have been lead-poisoned as a result of exposure to very small quantities of lead-based paint.

In addition, EPA has also considered the fact that HUD's standards, upon which EPA relied as a consensus standard, have changed with the issuance of HUD's final regulations under sections 1012/1013 of Title X. EPA believes it is appropriate to conform its final paint-lead hazard definition to HUD's regulations. It is EPA's determination that HUD is the government agency with the most experience in dealing with residential paint and the Agency has chosen to rely on HUD's judgment in these matters as to amounts of deteriorated paint that would result in adverse health effects. Industry standards tend to follow the leadership of HUD guidelines and regulations. EPA's consideration of the issues involving the uncertainty of choosing a paint hazard area threshold under the statutory standard for determining what constitutes a hazard, as well as a discussion of the history of the HUD standard for hazardous paint and EPA's evaluation of HUD's regulations follow.

B. Uncertainty analysis. Any deteriorated paint could conceivably cause adverse health effects, as noted by several comments. Furthermore, EPA would want people to know that any deteriorated paint needs to be dealt with. Very small amounts of lead-contaminated paint could be a cause for concern. Even a few paint chips could provide a very concentrated dose to a child that may ingest them. They may prove to be an attractive nuisance (particularly if they are brightly colored) that might encourage a child to ingest them. Any deteriorated surface could rapidly expand, particularly if a child should decide to pick at it. Because of this concern any deteriorated paint should be carefully monitored and stabilized.

The Agency cautions, however, that it does not believe full scale abatement, with all attendant regulations, would be appropriate for all deteriorated lead-based paint, particularly at the lesser areas of deterioration (i.e., less than: 2 square feet of deteriorated lead-based paint per room; 20 square feet of deteriorated exterior lead-based paint; or 10% or less of deteriorated paint on the total surface area of an interior or exterior type of component with small surface area).

Abatement in cases where there are very small amounts of deteriorated paint would make no sense in view of the fact that approximately 60 million residences have some lead-based paint and approximately 13.5 million have some deterioration. The National Survey of Lead and Allergens results will be released in the near future with a different estimate from that on which these numbers were based (Ref. ?). Recommending abatement for all hazards when relatively few children seem to be affected when compared to the total amount of homes with deteriorated paint could result in the cleanup of millions of homes that would result in little to no reduction in risk. Therefore, EPA believes that minimal degradation does not warrant abatement.

Nevertheless, the Agency leans towards being more protective in the face of uncertainties and has decided to have a standard at which any amounts of deteriorated paint would be considered a lead-based paint hazard. The more cracked or deteriorated paint that exists in a residence, the more likely it would be that amount of degraded paint would increase. The greater the deterioration, the more likely the increase in lead in dust. The paint-lead hazard levels would enable people to take protective action before excessive exposure to dust would occur. Since people are not likely to constantly monitor for dust levels, providing a standard that would focus on paint deterioration is an added level of protection. In addition, the more cracking and deteriorated paint that exists, the more likely the lead would be available for potential exposures through ingestion via dust or direct ingestion of paint chips.

In addition, EPA has decided to use the HUD interim standard for the paint-lead hazard (Ref. 5). This is because, in addition to the reasons stated above for having no threshold area, , the HUD standard is a level that people responsible for addressing the paint-lead hazards are either familiar with now or will have to become familiar with and, in the absence of any other definitive level, to choose, it makes sense to use the same standard as a sister agency for ease of identification and compliance. Of course, EPA will reconsider its decision should any information become available to allow choosing a more definitive level.

C. HUD's standard. EPA concurs with HUD's reasoning for setting its interim paint-lead hazards, as discussed in this section. HUD's reasoning for eliminating a level below which no action is required is explained in the preamble to HUD's final 1012/1013 rule. HUD stated that it was convinced by various comments from the public that there should not be an area threshold of deteriorated paint below which no action is required. These comments were: (1) That the *de minimis* exception (as it was referred to at the time) is arbitrary and not supported by science; (2) that the levels are too large, potentially allowing a total of over ten square feet of defective paint per room (counting four walls plus a ceiling plus small components); (3) that some owners or inspectors may use the area threshold as an excuse for overlooking hazardous conditions; and (4) that it is likely to shift the attention of workers from the importance of practicing lead hazard control and maintaining painted surfaces in a lead-safe manner to measuring the size of defective paint surfaces in order to document that surfaces fall above or below the *de minimis* level. (See 64 FR 50156.) In addition, HUD received comments that persons dealing with the threshold levels found it difficult to understand and put in practice. These comments indicated that people would spend too much time measuring the exact areas of deteriorated paint instead of focusing on making housing lead safe. (See 64 FR 50198.)

Based on these comments, HUD's final rule eliminates any provision that provides no action is needed with regard to deteriorated paint. HUD concluded this based on experience in its tenant-based assistance programs (where the area threshold provision was made effective in 1995) that indicated that the area threshold was a cause of confusion. (See 64 FR 50198.) As a result, HUD's final rule provides that all deteriorated lead-based paint (either

known or presumed to be lead-based paint) must be addressed. According to HUD, this would simplify the rule's implementation considerably.

Even though, under HUD's regulation all deteriorated paint must be addressed--through use of paint stabilization or interim controls, HUD nevertheless acknowledges that something less than abatement and, consequently, fully certified personnel, would be needed to address paint at lower levels of deterioration. HUD, thus, retained an area threshold exemption for required work practice and clearance standards. The levels of deterioration in this standard are the same as provided in EPA's TSCA section 402 work practice regulations--2 square feet of deteriorated lead-based paint per room, 20 square feet of paint on the exterior building, or 10% of the total surface area on an interior or exterior type of component with a small surface area. EPA's work practice standards were promulgated on August 26, 1996, 61 FR 45778. These standards have become the industry standard, having been in place since then and having been acknowledged as enforceable standards followed by the public. Thus, under HUD's regulations, activities that disturb painted surfaces of lesser deterioration do not have to use certified workers, work practices required under regulation, or work site clearance. (See 64 FR at 50149, 50156, 50166, 50184, 50185, and 50198.)

HUD had also submitted comments on this proposed 403 rule approximately 1 year before its 1012/1013 rule was issued. These comments were consistent with HUD's eventual final 1012/1013 rule in the sense that they explained that HUD has found it is more practical to require deteriorated lead-based paint of any size surface area to be addressed. HUD commented that use of an area threshold criterion for determining whether any control is necessary has the effect of having inspectors or risk assessors making efforts to measure surface areas instead of focusing on control of deteriorated paint. Further, it had been HUD's experience that some lead-based paint hazards have not been repaired because of confusion on whether or not enough of the paint had deteriorated to warrant attention.

HUD recommended that EPA should eliminate the area threshold for eliminating any need to control deteriorated paint. However, HUD then stated, ''All deteriorated paint of any size should be considered a hazard and should be repaired; however, containment, clearance, and safe work practices need not be required for hazards'' below the area threshold.

D. EPA's decision. For the reasons discussed above, EPA identifies as a paint-lead hazard any deteriorated lead-based paint, for surfaces other than friction surfaces, as noted below. However, EPA notes a caution that there is a level above which serious restrictions should be placed on worker certification and work practice standards and below which such restrictions are not needed. HUD and EPA also agree that any deteriorated paint needs to be dealt with.

Additionally, to attain consistency with the requirements of the 1012/1013 rule in the sense that action less than abatement should be taken with respect to levels below the hazard threshold, EPA is modifying the work practice standards found at 40 CFR 745.227 to require risk assessors to test all deteriorated paint on surfaces with a distinct painting history. This requirement would provide owners and other decision makers with information that would help these individuals take appropriate action (e.g., stabilize small amounts of deteriorated paint, increase monitoring of the property and resident children). Currently, the work practice standards require risk assessors to test paint only where deterioration exceeds the area thresholds. This sampling requirement, as amended, also applies to accessible surfaces. The existing sampling requirements do not separately address paint testing on these surfaces. The sampling requirements for friction and impact surfaces are discussed below.

ii. *Friction and impact surfaces.* In the final rule, a paint-lead hazard exists on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the dust hazard standard for that surface. A paint-lead hazard exists on an impact surface when there is any damaged or otherwise deteriorated paint that is cause by impact from a related building component such as a door knob that knocks into a wall or a door than knocks against its door frame.

EPA did not include a preferred option for friction/impact surfaces in the proposed regulation, but instead asked for comment on several options (63 FR at 30332–30333). These options included: Any lead-based paint on a friction/impact surface, abraded paint on a friction/impact surface, or no separate standard. In the latter case, the deterioration of paint on friction/impact surfaces would be counted along with the deterioration of all paint to determine hazardous paint, or the dust-lead hazard standard could be relied upon.

The final paint-lead hazards for friction and impact surfaces are within the range of options discussed for the proposal. EPA decided to include a reference to abrasion as a condition of hazard on the friction surfaces because abrasion indicates that the rubbing or impact of the surfaces is likely to generate lead-containing dust. To this condition the Agency added the presence of dust at the dust-lead hazard level because the combination of deterioration with rubbing or impact is likely to generate lead-contaminated dust. In light of the limited data available to EPA, the Agency issued a standard based on a reasoned and common sense approach that identifies conditions likely to contribute lead to dust and the existence of dust at the hazard level. Even with the condition of deterioration added, this option falls within the bounds of the alternatives presented in the proposal. It is more stringent than the alternative based on abrasion alone but less stringent than the option that would identify any lead-based paint on a friction and impact surface as a hazard.

In promulgating the friction surface paint-lead hazard standard, EPA has considered those comments that urged the Agency not to establish a separate standard for friction and impact surfaces, but instead to focus on dust. On friction surfaces, the absence of either a component that is not subject to abrasion or dust-lead at the hazard level would eliminate the component as a paint-lead hazard. This is because a positive dust test (i.e., presence of a hazard) suggests that a friction surface is a source of lead contamination.

EPA also determined that identifying as a hazard lead-based paint on friction and impact surfaces regardless of the paint's condition is inappropriate. The Agency does not believe that intact paint can generate significant amounts of lead-containing dust. Commenters who favored Option 1 failed to provide evidence supporting the contention that these surfaces contribute to lead-containing dust regardless of the paint's condition. The strongest argument presented by a proponent of Option 1 stated that the hazard designation would lead to the testing of these surfaces for the presence of lead-based paint. Property owners and occupants would then, at a minimum, be encouraged to monitor the condition of the paint and keep it intact. Monitoring of paint condition, however, does not require knowledge that the paint is lead-based. EPA believes that owners/

managers/occupants of target housing should monitor the condition of any paint on friction and impact surfaces. If the paint deteriorates or becomes abraded at any point and young children occupy the residence, the paint should be tested to determine if the paint is lead-based and if a hazard exists. Furthermore, if the component has any abraded or deteriorated paint, it would have to be tested as part of a risk assessment.

The final regulatory decision has also led EPA to amend the sampling requirements for lead-based paint under the work practice standards for risk assessments at 40 CFR 745.227. This amendment will require risk assessors to sample any visibly abraded or deteriorated paint on friction and impact surfaces as part of a risk assessment.

iii. *Accessible (chewable) surfaces.* The final rule at § 745.65(a) uses the term ''chewable'' surface to refer to the statutory term ''accessible'' surface. A paint-lead hazard exists on any chewable lead-based paint surface on which there is evidence of teeth marks. EPA did not include a preferred option for accessible/chewable surfaces in the proposed regulation, but instead asked for comment on several options (63 FR 30333). These options included: Any lead-based paint on a interior window sill up to 5 feet off the floor; and no separate standard.

EPA decided to include a standard for chewable surfaces in the final rule, which is more stringent than no separate option and less stringent than any lead-based paint on interior window sills, for the following reasons. EPA has added evidence of chewing as a factor for determining whether a paint-lead hazard exists and has eliminated any requirement that the chewable surface must be up to 5 feet from the floor. The data available to the Agency indicate that chewing on protruding components is extremely rare, it nevertheless presents a cause for concern. Accordingly, evidence that chewing occurs would enable the public to focus attention on those areas where the risk is real. Further, by adding this evidence of chewing requirement, there would be no reason to retain any height requirement for the chewable surface. If there is evidence of chewing on a lead-based paint surface, there need be no other factor to consider.

The option that would identify lead-based paint on interior window sills regardless of paint condition as a hazard is not likely to protect any significantly larger amount of children than would be protected by the requirement to have evidence of chewing. On the other hand, such a stringent requirement could lead to action in millions of other properties where children do not exhibit this behavior, diverting resources from more significant sources of exposure such as deteriorated paint and lead-containing dust.

Most proponents of this option or options to include a broader range of surfaces failed to provide a compelling basis to EPA for selecting this or broader options because they did not provide supporting data (and most did not provide analysis). One State health department suggested that this option would lead to paint testing of these surfaces. Property owners and occupants would then, at a minimum, be encouraged to monitor conditions. EPA recognizes that it would be useful to know if chewable surfaces are covered with lead-based paint so that these surfaces and the chewing behavior of resident children can be monitored by owners and occupants. Chewing behavior by young children, however, can and should be monitored in the absence of this knowledge. This approach would avoid widespread testing of intact paint, which is costly and may require damaging the paint in situations where an x-ray flourescence (XRF) instrument cannot be used.

Several other commenters noted the data that EPA presented relates to chewing, not mouthing of surfaces. Although mouthing may be more frequent than chewing, exposure is less likely to result from mouthing of intact surfaces. If the paint on interior window sills is intact, it would likely have been repainted since lead-based paint was banned for residential use over 20 years ago. Consequently, a child who mouths intact paint would likely come in direct contact only with paint that is not lead-based and meets the Consumer Product Safety Commission standard for new residential paint (i.e., 0.06% by weight). It is important to emphasize that EPA does not intend to imply that mouthing of intact painted surfaces is risk-free behavior. Mouthing of intact paint may result in exposure to low levels of lead and other chemicals and, therefore, should be avoided.

The Agency wishes to note that it is very concerned about the potential exposure for the relatively few children who do chew on intact lead-based paint on such surfaces. The Agency has concluded that the best way to protect these children who do chew on such surfaces is through guidance that strongly recommends immediate action when such behavior is observed. A range of responses is available to property owners and other decision makers, such as plastic or metal coverings.

iv. *Requirements for interpreting paint sampling.* EPA is adopting the proposed requirements for interpreting paint sampling results (63 FR 30339) except for one clarification that is being made in response to a comment from HUD. The Department stated that language regarding the assumption risk assessors should make about paint on surfaces that have not been tested was unclear. The proposed requirement stated that the risk assessor is to ''assume all like surfaces that have a similar painting history contain lead-based paint if the tested component has lead-based paint.'' HUD asserts that the term ''like surface'' is ambiguous as to whether it refers to building components in the same room equivalent or anywhere in the building. Chapter 7 of the HUD Guidelines indicates that this extrapolation can be made only to components in the same room equivalent, with extrapolation to untested room equivalents appropriate only in restricted circumstances. HUD, therefore, recommends that the method be amended to read ''assume all like surfaces in the same room equivalent that have a similar painting history . . .'' EPA agrees with HUD that the term ''like surfaces'' is ambiguous and has changed the language to read ''like surfaces in the same room equivalent.''

The requirements for interpreting the results of paint testing apply to friction and impact surfaces, chewable surfaces, and other surfaces with deteriorated paint. EPA is also adopting the provision that allows risk assessors to use composite paint sampling. The Agency wishes to restate the point made in the proposal (63 FR 30339), however, that composite sampling for paint can be used to rule out the presence of lead based paint but cannot be used to identify the specific sample (and therefore component) that is lead-based. Therefore, a risk assessor should only use composite testing if he or she is reasonably confident that lead-based paint is not present on the surfaces sampled.

4. *Certified risk assessor requirement.* In the proposed rule, EPA included a requirement that lead-based paint hazards be identified by certified risk assessors following the risk assessment work practice standards and that ex situ sample analysis be performed by recognized laboratories. The Agency argued that this approach would ensure the reliability of sampling results and provide flexibility for future changes in hazard evaluation technology.

This issue received substantial public comment and raised concerns which

have led the Agency to reconsider promulgation of this requirement. Many commenters believed that such a requirement would inhibit the ability of communities and individuals to identify lead-based hazards, and to deliver services or pursue response actions to protect children when an obvious hazard is present, due to the cost of full risk assessments and the lack of availability of risk assessors. Other commenters questioned the Agency's authority to mandate such a restriction. Some commenters believed that certification was appropriate and necessary to ensure the quality and reliability of hazard determinations, but questioned the need for full risk assessments or for such lead-based paint activities to be restricted to risk assessors. Some commenters also suggested that a screening procedure be allowed in lieu of a full risk assessment.

In reconsidering its proposed requirement, the agency agrees with the comments that current shortages and surpluses both in availability of risk assessors, and potentially high costs for full risk assessments could, in certain localities, impede response actions for at-risk children. It also recognizes that for certain hazard determinations, such as the visual determination of deteriorated paint, or analysis of dust levels, a full risk assessment may not be appropriate and may waste scarce resources available for hazard control or abatement.

The Agency also recognizes that a certified risk assessor may not be necessary for the simple visual determination of deteriorated paint, and that such more elementary evaluations of hazards at a property could potentially be performed by individuals with less training and experience than a certified risk assessor, and that such limited activities may not in themselves require certification, but may be performed effectively and reliably when the person performing those activities does so under the supervision of a certified risk assessor or other certified lead professional. In addition, the Agency did not intend to require that certified risk assessors be required to perform clearance sampling following abatements. For these reasons, the Agency believes it prudent to deal with these general issues in subsequent rulemakings and regulatory interpretations which will further address work practices and /certification requirements for both.

While the Agency believes that these issues are best addressed in the overall framework of the section 402 work practices and certification standards, it is nevertheless concerned that those uncertified individuals who may seek to determine hazards may not always produce results of the same quality and reliability as those obtained by a certified risk assessor, and that the use of uncertified personnel to determine the presence or absence of lead-based paint hazards should be considered with caution.

Sampling of dust and soil to determine lead-based paint hazards is not a trivial procedure. The procedures which must be followed by risk assessors in determining the nature and extent of lead-based paint hazards at a property are stated at 40 CFR 745.227. If uncertified individuals are used to determine hazards, it is critical that they have the appropriate training, and follow appropriate procedures for sampling, custody of samples, and analysis of samples to obtain defensible results. If uncertified persons lack the training and experience to determine lead-based paint hazards properly, their findings may result in detrimental consequences to the health of children and create false liabilities for property owners. A false negative result--the failure to determine the presence of a hazard when one actually exists, will fail to protect children from real hazards. A false positive result--the determination of a hazard when none is present--may cause an owner to spend additional resources to hire a certified risk assessor.

IV. Overview of Significant Public Comments and EPA's Responses

In response to the proposed rule, EPA received over 500 comments representing the general public, national and local environmental groups, national and local lead-poisoning prevention advocacy groups, the lead mining and manufacturing industry, State and local governments, other Federal Agencies, community-based organizations, and Federal Advisory Committees, among others. These comments address numerous issues, including EPA's interpretation of the statutory requirements, the policy basis for the standards, the Agency's technical analysis, and the Agency's decisions regarding the standards and other regulatory requirements. As noted previously, the RTC document contains EPA's detailed characterizations and responses to all significant public comments.

This section of the preamble presents in summary form, the characterizations and responses to the comments on the issues that EPA believes are of greatest interest to the public. These comments, specifically, are as follows: (1) It is not appropriate under the statutory requirements of Title X, or from a policy perspective, to consider costs in the development of the hazard standards; (2) standards would fail to protect children in inner-city neighborhoods who are at greatest risk; (3) the dust hazard standard should be significantly lower; and (4) EPA should provide a better explanation of the differences between the TSCA section 403 hazard standards for soil and the Superfund approach for addressing lead in soil.

A. Consideration of Costs in Developing Dust and Soil Hazard Standards

As discussed extensively in the preamble to the proposed rule, this preamble and the RTC document, EPA chose to base its dust and soil hazard standards on consideration of the potential for risk reduction of actions that may be taken (considering uncertainties in the data and scientific evidence describing the risks) and whether such risk reductions are commensurate with the costs of those actions. This is commonly referred to as cost-benefit balancing. Further, the Agency has decided to base the hazard standards on the levels at which, on a national level, risks justify abatement in order to comply with the statutory standard that the hazard levels are those that ''would result'' in adverse health effects. EPA has noted, however, in various places throughout this preamble, that temporary measures and interim controls can be appropriate in many situations. The analysis of abatement, as noted further below, is EPA's analytical model. The Agency may not require any particular action to be taken.

A number of comments from some advocacy groups and some government organizations expressed general disagreement with this approach from both a legal and policy standpoint. Other comments provided detailed arguments both for and against this approach. EPA responds in the RTC document to the more detailed arguments raised by these comments. However, the Agency believes it is appropriate to discuss the issue more generally in this preamble to clear up important issues and to allay apparent fears of some members of the public.

Comments criticizing EPA's use of cost-benefit balancing generally argued that it is inappropriate to make decisions regarding the selection of hazard standards based on cost or other risk management considerations. Serious concern was expressed that EPA modified health-based protective standards by cost, or feasibility, considerations and that scientific decisions about a health based standard

cannot be modified by such considerations. These comments argued that EPA should have made decisions by tying hazard standards to a target blood lead level. Costs and other risk management factors should only be considered by persons implementing the standards.

EPA believes it is necessary to explain how cost-benefit balancing was used in this rulemaking. First, the decision to use a cost-benefit balancing approach is within the Agency's statutory authority. Title X and TSCA Title IV neither require nor preclude the consideration of costs in setting the standards. EPA's interpretation of the statute, however, shows that an approach that uses cost-benefit balancing is consistent with the statutory language and legislative history, as described more fully in the proposal (63 FR at 30312-30314), earlier in this preamble and the RTC document.

A cost-benefit balancing framework provides EPA with an approach to factor uncertainty in scientific data into the decisionmaking and to set standards where there are no distinct boundaries. For this action, EPA's dilemma is to choose as a hazard that level of lead above which the Agency is reasonably confident that adverse effects would result. Below that level there may still be adverse effects, but the weight of scientific evidence indicating adverse effects is not as great. This formulation, of course, is an over simplification by necessity. The Agency is tasked with line drawing by Congress in a circumstance where there are no clear lines. At the simplest level, no one can say that 1,201 ppm of lead in soil is worthy of abatement and 1,199 ppm is not. As a result, consistent with the applicable statute, EPA used a balancing approach to pick the cutoff level above which a regulatory hazard exists.

EPA's approach first, and foremost, considers the weight of evidence as to whether dust or soil lead will actually result in adverse effects. The surrogate for adverse effects is a consideration of blood lead levels and the potential effects elevated blood-lead levels can have on intelligence and lifetime earnings. Reduction in blood lead levels and, presumably, increased lifetime earnings are then related to reduction in environmental levels. No one would dispute that the higher the environmental lead levels are in any particular medium (e.g., soil or dust), the greater the likelihood of increased blood-lead due to exposure from that medium. At low environmental lead levels, there is less confidence that any specific medium is responsible for blood-lead level increases. EPA's problem is drawing the line at which concern for exposure to lead from paint, dust, and soil diminishes that is, those levels below which EPA will decide a regulatory hazard does not exist.

EPA, using the best scientific evidence it had, did the line drawing by assigning a monetary value to the health effects that will be prevented (''benefits'') and evaluating whether elimination (abatement) of the lead hazard that causes these effects is commensurate with the societal resources (determined by the costs of abatement) that would be expended by doing the abatement. This gives EPA a way to evaluate the certainty of the scientific evidence and develop the confidence it needs to determine that the levels it has chosen would result in adverse effects. Essentially, in this area of scientific uncertainty about risk, EPA is more willing to say that a regulatory hazard exists if it can find that costs of abatement are expected to be reasonable. Costs, of course, are given far less weight (or maybe no weight at all) in circumstances in which adverse effects are a certainty. Certainty simply does not exist at the lower lead levels with which the Agency is dealing in this rule.

Two salient points need to be reiterated here on how a cost-balancing analysis was used in this rulemaking. In the first place, for this rule, cost-benefit balancing is a useful method for decision making within the range of uncertainty in the Agency's analyses. In any event, use of the analysis only helps define the boundaries of the inquiry and is not a sole basis for any decision. Once EPA decided the range of options, the Agency chose the levels within those ranges. Second, EPA used the normative cost-benefit analysis only to compare options with the understanding that the relative balance of costs and benefits estimated should be reflective of the relative balance of actual costs and benefits. Thus, decision makers still needed to exercise judgement. There is no ''black box'' into which numbers are entered and a decision comes out.

The comments that object to EPA's approach for hazard determination for dust and soil offer as an alternative determination of hazards by reference only to environmental levels that are associated, through modeling, with a percentage of children exceeding various blood lead levels. For example, a hazard standard could be that level at which models show no more than 5% of children would exceed 10 μg/dL of blood lead. This type of standard would be based solely on the toxicity of lead (at a particular blood level) and the potential exposure. While EPA did use this method for picking the initial candidate hazard levels, the Agency declined to use this method for choosing hazards.

The reasonableness of EPA's approach is supported to a large extent by the fact that the Agency received several comments recommending particular blood levels and percentages but no comment provided EPA with any kind of rational basis for choosing the standard based on those levels and percentages. Most of these comments argued for having no more than 5% of children above 10 μg/dL. However, they provided no rationale for saying why this would meet the ''would result'' standard for determining lead-based paint hazards (i.e., why shouldn't we have zero children above 10 μg/dL, or why 10 μg/dL is the proper number for the hazard determination and not a higher or lower number).

EPA's view of the cost-benefit approach points out another misconception in the comments about cost-benefit analysis. This misconception is that EPA's approach is not health-based, but instead modifies a protective standard based on cost considerations. Commenters also seem to believe that the Agency is using cost considerations to leave children unprotected. This is not the case. Instead, as discussed above, EPA evaluated different options within the range of scientific uncertainty provided by the two models used in the Agency's analyses. While it is true that as levels get higher, the certainty regarding the probability of harm increases, this does not mean that lower levels should be discounted or never addressed. It may mean, however, that as you go lower, the levels are less likely to meet the goal of this rule to set levels at which all abatements are specified to be conducted in a specific way. For purposes of setting such a national standard, EPA believes that it is reasonable to choose a level within the range at which there is greater certainty regarding the probability of harm, being always mindful of the need to advise the public that lower levels are not risk-free and may in individual cases present significant risks.

Given the range of uncertainty shown in its analyses for this rule, EPA is choosing an option that the Agency believes provides protection, and at which there is a higher level of certainty that in all cases abatement is likely to reduce risks significantly. EPA has set its dust and soil hazard standards at the lowest levels at which it believes across-the-board abatement and its associated expenditure of resources is justified. Evaluation of resource allocation, of which costs are a measure, is a method

that was used in this rule as a tool to make decisions within a set range of uncertainty.

Finally, EPA's hazard standards should not be considered in isolation, but must be considered along with the Agency's tiered approach for paint and soil. Under this approach, the Agency recognizes that risks could exist below the hazard standard and recommends that organizations and individuals may want to consider taking some action, informed by knowledge of local circumstances, at levels below the hazard levels.

B. Standards Do Not Protect Children at Greatest Risk

Groups representing environmental justice and children's health protection interests argued that the standards do not protect children at greatest risk. Some argued that the 1 to 5% probability level for exceeding 10 μg/dL (EPA's basis for choosing the initial candidate hazard levels in the final rule and the Agency's basis for evaluating lead-contaminated dust and soil in the proposed rule) would result in no improvement because the percentage of children with elevated blood lead levels is already below 5%. Therefore, the populations with the highest blood lead levels would not benefit from the standards.

EPA strongly disagrees with this assertion and, in fact, has concluded that the exact opposite is true. The argument that the 1 to 5% probability criteria would result in no improvement for children at risk reflects confusion with respect to the national blood-lead data and risk to individual children. The national blood-lead data is composed of millions of children exposed to a broad variety of environmental-lead conditions. As such, it actually consists of a broad range of individual risks ranging from near zero to levels above 50% for children exposed to the very worst conditions. The average population risk is just below 5%. Children in at-risk communities tend to have the higher individual risk, as borne out by the higher prevalence of elevated blood lead levels in these communities (e.g., > 20% for African American children living in pre-1950 housing).

In fact, the hazard standards identify a higher percentage of African-American children than any other group. Moreover, instead of offering more protection to children in at-risk communities, more stringent standards may actually afford less protection to these children by diluting the resources available to address hazards in these communities.

C. Dust-Lead Hazard Standard Should be Significantly Lower

Several comments argued that the dust-lead hazard should be significantly lower, in the 5 to 10 μg/ft^2 range. They claimed that a hazard should be found because more than 5% of children would have blood lead levels above 10 μg/dL. This recommendation is based on several analyses including an independent analysis of the Rochester Lead-in-Dust Study and the so-called HUD pooled analysis. According to these commenters, these analyses show that significant risk exists where floor dust-lead levels are below 10 μg/ft^2.

EPA agrees that significant risks should be addressed but disagrees with the approach of these commenters. First, as noted above, these comments provided no rational basis for deciding that a regulatory hazard exists based solely on environmental levels associated with particular blood lead levels. Nevertheless, EPA concludes after review of these comments and analyses that the results showing more than 5% of children exceed 10 μg/dL at the low environmental levels were achieved by focusing almost exclusively on the contribution of dust-lead to exposure and not adequately accounting for the contribution of soil and deteriorated lead-based paint to exposure. When exposure to these other sources is adequately accounted for, as EPA believes was done in its analysis, significant risk attributable to dust-lead is not found until dust-lead levels on floors reach 40 μg/ft^2.

The data also indicate that to make predictions of risk based exclusively on dust-lead measurements would be an inefficient and imprudent approach. An examination of the Rochester data reveals that in practically every case where there was a child with an elevated blood lead level and floor dust lower than 40 μg/ft^2, soil-lead levels were elevated and/or deteriorated lead-based paint was present. Moreover, in most houses with dust-lead levels below 40 μg/ft^2, children did not have elevated blood lead levels because other significant sources of exposure were not present.

EPA believes that the above-mentioned empirical data supports its view that it is more technically correct to assess and control exposure in all three media, as opposed to taking an approach that focuses exclusively on dust. Given the uncertainty that exists with respect to the contribution to exposure presented by each medium individually, the Agency believes that it is prudent to control exposure from the combination of paint, dust, and soil together rather than individually. Also, control of all three media also prevents recontamination of one medium by another, making control efforts more effective.

D. Relationship of Soil Hazard Standard to Superfund Soil Cleanup Standards

Several commenters expressed concern about the difference between the TSCA approach for addressing lead in soil in pre-1978 residential property and the approach under programs administered by the Office of Solid Waste and Emergency Response (OSWER) specifically, Superfund sites and RCRA Corrective Action Facilities. Responses to comments on the details of the differences in the programs are addressed in the RTC document. In this section, however, EPA responds generally to issues raised on the relationship between the programs administered by OSWER and TSCA. In general, comments identified concerns that differences in the two programs could cause confusion and that persons responsible for cleanup under the OSWER programs could use the TSCA standard to avoid taking response actions to achieve protection.

As a preliminary matter, EPA emphasizes that at lead-contaminated residential sites both TSCA and the OSWER programs seek to protect the health of the most susceptible population (children under 6 years of age) and to promote a program that assesses and addresses risk. The approaches taken by the various programs share many important aspects, but also differ in some respects because of their purposes. The TSCA program is guided by this section 403 rule, which identifies lead-base paint hazards, which consist of lead paint and lead-containing residential dusts and soils that the Agency considers to be hazards under applicable statutory criteria. Guidance for the OSWER programs is provided by the 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities (OSWER Directive # 9355.4-12, 1994) and Clarification to the 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities (OSWER Directive # 9200.4-27P, August 27, 1998) (Refs. 15 and 16).

The EPA programs that implement the RCRA and CERCLA statutes rely on the IEUBK model for relating environmental levels to blood lead levels in children. The OSWER soil lead guidance recommends that the IEUBK Model be applied to utilize site-specific information that can be very important in evaluating the risks at hazardous

waste sites with residential exposure scenarios. This section 403 rule also employs analyses that have relied on the IEUBK Model and the empirical model which employs analyses based on empirical data.

In the absence of site-specific information at hazardous waste sites, EPA believes that soil lead levels above 400 ppm may pose a health risk to children through elevated blood lead levels. The 400 ppm screening level identified in the OSWER soil lead guidance is consistent with both the children's play area hazard determination identified in this rule and the initial candidate hazard level discussed in this preamble. Site-specific information at hazardous waste sites would provide a basis to identify a different soil lead level that would be protective of health. The TSCA soil hazard levels of 400 ppm (play areas) and an average 1,200 ppm (rest of yard) should not be understood as a minimum cleanup level for lead in soils at hazardous waste sites and levels greater than these could be consistent with CERCLA requirements, depending on site-specific factors. Soil lead levels less than these still may pose serious health risks and may warrant timely response actions including abatement. The hazard standard in this TSCA rule was intended as a ''worst first'' level that will aid in setting priorities to address the greatest lead risks promptly at residential and child-occupied facilities affected by lead-based paint.

In contrast with the section 403 rule, which establishes minimum national standards that are designed to be used at millions of residential properties and child-occupied facilities across the nation, the studies that take place at CERCLA or RCRA involve multiple hazardous substances with potentially numerous sources of contamination and multiple pathways of exposure that require that response levels be developed with site-specific information. Other statutory and regulatory criteria that would typically be considered in determining a final clean-up number include: long-term effectiveness and permanence; and reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; cost; State acceptance; and community acceptance.

V. References

The official record for this rulemaking has been established under docket control number OPPTS–62156, and the public version of the official record is available for inspection as specified in Unit I.B.2. The following is a listing of some of the documents that have been placed in the official record for this rulemaking, including those specifically referenced in this rulemaking.

1. Brody, D.J., J.L. Pirkle, R.A. Kramer, K.M. Flegal, T.D. Matte, E.W. Gutiter, and D.C. Paschal. 1994. ''Blood Lead Levels in the U.S. Population: Phase I of the Third National Health and Nutrition Examination Survey (NHANES III, 1988 to 1991).'' Journal of the American Medical Association. 272(4):277-283.

2. Pirkle, J.L., D.J. Brody, E.W. Gunter, R.A. Kramer, D.C. Paschal, K.M. Flegal, and T.D. Matte. (1994) ''The Decline in Blood Lead Levels in the United States: The National Health and Nutrition Examination Surveys (NHANES).'' Journal of the American Medical Association. 272(4):284-291.

3. CDCP. (1991, October) Preventing Lead Poisoning in Young Children: A Statement by the Centers for Disease Control.

4. CDCP. (1997, February 21) ''Update: Blood Lead Levels-U.S., 1991-1994.'' Morbidity and Mortality Weekly Report. 46(7):141-145.

5. HUD. (1995, June) HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

6. HUD. (1995) The Relation of Lead-Contaminated House Dust and Blood Lead Levels Among Urban Children. Volumes I and II. Final report to U.S. HUD from the University of Rochester School of Medicine, Rochester, NY and The National Center for Lead Safe Housing, Columbia, MD.

7. USEPA. (1990, January) ''Report of the Clean Air Scientific Advisory Committee on its Review of the OAQPS Lead Staff Paper and the ECAO Air Quality Criteria Document Supplement.'' EPA-SAB-CASAC-90-002. January.

8. USEPA. (1994) Reducing Lead Hazards When Remodeling Your Home. EPA 747-R-94-002.

9. USEPA, OPPT. (1995, April) Report on the National Survey of Lead Based Paint in Housing - Base Report. EPA 747-R-95-003.

10. USEPA, OPPT. (1995, April). Report on the National Survey of Lead Based Paint in Housing - Appendix II: Analysis. EPA 747-R-95-005.

11. USEPA. (1995, April) Report on the National Survey of Lead-Based Paint in Housing. Appendix I: Design and Methodology. EPA 747-R95-004.

12. USEPA. (1997, December) Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil. Volumes I and II. EPA 747-R-97-006.

13. USEPA. (1998) Economic Analysis of TSCA Section 403: Lead-Based Paint Hazard Standards.

14. USEPA. (2000) Economic Analysis of TSCA Section 403: Lead-Based Paint Hazard Standards.

15. USEPA. (1994) 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive #9355.4-12, 1994.

16. USEPA. (1998, August 27) Clarification to the 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive #9200.4-27P.

17. USEPA. (1996) Urban Soil Lead Abatement Demonstration Project, Volume I: EPA Integrated Report #600/P93/001aF.

VI. Regulatory Assessment Requirements

A. Executive Order 12866

Under Executive Order 12866, entitled *Regulatory Planning and Review* (58 FR 51735, October 4, 1993), the Office of Management and Budget (OMB) has designated this an ''economically significant regulatory action,'' because this action may result in behavioral changes that involve increased expenditures by owners of target housing and child-occupied facilities, with a potential annual effect on the economy of $100 million or more. Although the establishment of the standards contained in this rule do not, in and of themselves, mandate any action, the Agency recognizes that the existence of the hazard standards may influence the decisions or actions of owners of target housing. This rulemaking was therefore submitted to OMB for review under this Executive Order, and any changes made during that review have been documented in the public version of the official record.

In addition, while EPA does not believe that this action, in and of itself, imposes any requirements, EPA has prepared an economic analysis of the potential impacts of this action, which is contained in a document entitled *Economic Analysis of Toxic Substances Control Act Section 403: Lead-Based Paint Hazard Standards* (Ref.). The Agency believes that, in establishing the standards, it is reasonable to consider the potential costs and benefits associated with the possible actions that an owner could or might take based on the hazard standard. The analysis, in conjunction with other considerations, helped the decision-makers to select the final hazard standards presented in this document. The analysis is available as a part of the public version of the official record for this action and is briefly summarized here.

Building on the economic analysis for the proposed rule (Ref. ?), which is summarized in Unit XII of the proposed rule (63 FR at 30349-30351), the final economic analysis contains one major change. For the final rule, EPA separtely assessed the costs and benefits associated with a separate soil standard for play areas and presented the results in Appendix 7 of the Economic Analysis. The following summary of the economic analysis focuses on this change. A summary of the rest of the analysis was presented in the proposed rule (63 FR at 30349–30351).

In this additional analysis, the revised model goes through a three-step process to estimate which homes might incur a soil abatement and what parts of the yard might be addressed. The first two steps are the same as the original model, a third step was added to address the play area issue. In the original model, if the home's average of near and remote soil concentrations did not exceed the standard, then the model assumed that no soil abatements would occur. In the revised model, if the average soil concentrations were below the soil standard, then the play area (represented by the remote area) soil concentration was compared to the standard. If this alone exceeded the standard, then the model assumed that the play area soil would be removed and replaced.

The Agency notes that the costs presented here for soil response actions are based upon the assumption that those responses would be soil abatement. As noted previously in this preamble, in performing its analyses for this rule, the Agency could not quantitatively compare interim control strategies with abatement strategies because there are only limited data available on the effectiveness of interim controls over extended periods of time, and those data which are available are not suitable for quantitative comparisons with abatements. Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. Thus, to the extent that interim control strategies are used rather than abatement, the actual costs may be different from those presented below.

The play area is assumed to be much smaller than the entire remote area of the yard, and separate soil intervention unit costs were estimated for the play area. The costs assume that the average play area for a single-family home is 200 square feet, and the average play area for a multi-family building is 400 square feet. The play area soil intervention costs are estimated to be: $1,070 for a single-family house ($1,738 if the soil is hazardous), and $1,566 for multi-family buildings ($2,903 if the waste is hazardous). In addition to these soil intervention costs, each home incurs a dust clean-up. Because dust clean-ups are required for certain other interventions, a particular home may already be incurring dust clean-up costs and would not incur a second set of dust clean-up costs.

The total costs (estimated over a 50–year span, and discounted at 3%) for the final dust and soil standards of 40 μg/ft^2 for floor dust, 250 μg/ft^2 for window sill dust and 1,200 ppm for soil, are estimated to be $69 billion, while the total estimated benefits are $192 billion using the IEUBK model and $49 billion using the empirical model, resulting in estimated net benefits of $123 billion using the IEUBK model and $20 billion using the empirical model. About 26.7 million homes are projected to exceed one or more of the standards, and the Agency projected approximately 46.0 million children would experience reduced exposure to household lead in soil, dust, and paint.

B. Regulatory Flexibility Act

Pursuant to section 605(b) of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the Agency hereby certifies that this final rule will not have a significant economic impact on a substantial number of small entities. The factual basis for the Agency's determination is presented in the small entity impact analysis prepared as part of the economic analysis for this rule (Ref. 14), and is briefly summarized here.

It is important to first note that this rule does not, in and of itself, mandate any action, or directly impose any costs. Nevertheless, since the Agency recognizes that the existence of the hazard standards may influence the decisions or actions of owners of target housing, the Agency has considered the potential costs and benefits associated with the possible actions that a small entity could or might take based on the hazard standard. In addition, EPA has already promulgated several regulations implementing other sections of Title X that use or reference the hazard standards contained in this rule, and also has a few other related regulations under development. In promulgating these regulations, the Agency has and will continue to consider the potential adverse impacts on small entities in the context of those regulations, and in compliance with the RFA. In general, EPA strives to minimize potential adverse impacts on small entities when developing regulations to achieve the environmental and human health protection goals of the statute, and the Agency.

For the purpose of analyzing the potential impacts of this rule on small entities, EPA used the definition for small entities that is found in section 601 of the RFA. Under section 601, ''small entity'' is defined as: (1) A small business that meets Small Business Administration (SBA) size standards codified at 13 CFR 121.201 which uses the NAICS codes to categorize businesses; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. The SBA size standard for the types of small businesses potentially impacted by this rule is $5 million in annual revenues for operators of multi-family housing or apartment buildings (NAICS code 531110 and 531311).

It its analysis, the Agency has assumed that this rule would impact small businesses that engage in lead-based paint activities (i.e., abatement, risk assessment, etc.), small businesses that offer LBP activity related training, small businesses that own or manage rental properties involving target housing, small not-for-profit organizations that are engaged in LBP activities and are not dominant in their field, and small governmental jurisdictions that receive assistance through Federal housing programs (i.e., city and county public housing authorities). By definition, States and Federal agencies are not small.

Based on the analysis, the Agency estimates that approximately 99% of the firms would have less than a 1% impact on revenues due to this rule, and approximately 1% of firms could experience impacts between 1% and 3% of rental revenue. A comparison of annual compliance costs to annual rental income is equivalent to the commonly used ratio of compliance costs to sales. Although the rule could impact a substantial number of small entities, this analysis indicates that the potential impact should not be significant.

Information relating to this determination has been provided to the Chief Counsel for Advocacy of the Small Business Administration upon request,

and is included in the public version of the official record for this rulemaking.

C. Paperwork Reduction Act

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information subject to OMB approval under the Paperwork Reduction Act (PRA) (44 U.S.C. 3501 *et seq.*) unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations, after initial publication in the **Federal Register**, are maintained in a list at 40 CFR part 9.

This final regulatory action does not contain any information collection requirements that require additional OMB approval under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.* Specifically, States and Tribes with authorized programs under 40 CFR part 745, subpart L will still need to demonstrate their standards for identifying lead-based paint hazards and clearance standards for dust, in the reports that they submit to EPA under 40 CFR 745.324(h). This reporting requirement is contained in the regulations implementing TSCA sections 402(a) and 404, for which the Information Collection Request (ICR) has already been approved by OMB under control number 2070–0155 (EPA ICR No. 1715). As a part of the economic analysis, EPA also re-examined this ICR and determined that the burden estimates provided in the ICR would not change as a result of the promulgation of the standards proposed. Because there are no new information collection requirements to consider, or any changes to the existing requirements that might impact the existing burden estimates, additional OMB review and approval under the PRA is not necessary.

D. Unfunded Mandates Reform Act

Pursuant to Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any 1 year. As indicated previously, this rule does not, in and of itself, mandate any action, or directly impose any costs. Nevertheless, the Agency recognizes that the existence of the hazard standards may influence the decisions or actions of State, local or tribal governmental officials as they relate to lead-based paint activities, i.e., hazard interventions and risk assessments. In addition, EPA has already promulgated several regulations implementing other sections of Title X that use or reference the hazard standards contained in this rule, and has a few other related regulations under development. In promulgating these regulations, the Agency has and will continue to consider the potential impacts on State, local or tribal governments.

The UMRA requirements in sections 202, 204, and 205 do not apply to this rule, because this action does not contain any ''Federal mandates'' or impose any ''enforceable duty'' on State/Tribal, or local governments or on the private sector. The requirements in section 203 do not apply because this rule does not contain any regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132

Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' are defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This final rule does not have federalism implications, because it will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Although the standards established by this regulation may be adopted by any State, this regulation does not contain any mandates, and will not, therefore, impose any substantial direct costs on States. Nor would the rule substantially affect the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government. Thus, Executive Order 13132 does not apply to this rule.

Although section 6 of Executive Order 13132 does not apply to this rule, EPA involved State and local governmental agencies in an extensive ''dialogue'' process, which is discussed in more detail in Unit II of the preamble to the proposal (63 FR at 30307). During development of the proposed rule, EPA also consulted with the States at meetings of the Forum on State and Tribal Toxics Action and the annual EPA meeting with State program representatives.

F. Executive Order 13084

Under Executive Order 13084, entitled *Consultation and Coordination with Indian Tribal Governments* (63 FR 27655, May 19, 1998), EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments.

This rule does not significantly or uniquely affect the communities of Indian tribal governments, nor does it impose substantial direct compliance costs on such communities. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

Nevertheless, although tribal governments are not required to administer any of the Lead Programs, the Agency consulted with interested Tribal government representatives as part of the Forum on State and Tribal Toxics Action and EPA's annual national lead meeting with States and tribes. The Agency has also provided extensive technical and financial assistance.

G. Executive Order 12898

Pursuant to Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629, February 16, 1994), the Agency has considered environmental justice-related issues with regard to the potential impacts of this action on the environmental and health conditions in minority and low-income populations. The Agency's standards will protect children in minority and low-income communities from disproportionate burdens. This is based on the findings of the Agency's economic analysis which shows that non-white populations receive more of the public health benefit associated with the standards.

In addition, EPA consulted with representatives of a variety of interests, including members of environmental justice advocacy groups. The Dialogue Process, which EPA specifically established to provide input into the decision making process, included a low-income parent, two members of the National Environmental Justice Advisory Council, and representatives

of two other groups who spoke on behalf of disadvantaged populations. These individuals comprised 20% of the membership of the process. Moreover, during the public comment period, EPA held two public meetings where residents of low-income communities and representatives of environmental justice groups offered public comment to EPA. The Agency also received written comments from 50 groups and several hundred individuals raising environmental justice concerns. Consequently, EPA believes that it has complied with the provision of the executive order to provide representatives of environmental justice interests to participate fully in the process and to provide input and comment to the Agency.

Furthermore, recognizing that these standards would be used by and affect millions of people that do not have a comprehensive understanding of the science of lead hazards, EPA made a conscious decision to make the standards simple. For example, instead of joint standards that might have better reflected overall risk under some circumstances, EPA chose to establish media-specific standards because they are easier to understand and use. Outreach documents (e.g, fact sheets) are written and designed with the specific objective of making the regulation easy for the public to understand. In addition, EPA's broader lead outreach program includes extensive elements that specifically target non-white and low income communities.

H. Executive Order 13045

Executive Order 13045, entitled *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to this rule because OMB has determined that this rule is ''economically significant'' as defined under Executive Order 12866 (see Unit VI.A.). In addition, the environmental health or safety risk addressed by this rule may have a disproportionate affect on children.

In accordance with section 5(501) of Executive Order 13045, EPA has evaluated the environmental health or safety effects of lead-based paint on children in the selection of the hazard standards contained in this rule. The results of this evaluation are contained in the ''Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil'' and the supplement to this analysis. Copies of these documents have been placed in the public version of the official record for this rule. This analysis focused almost exclusively on assessing exposure and risk to young children.

Moreover, the standards selected by EPA are designed first and foremost to protect children from lead in residential paint, dust, and soil. In this regard, EPA believes that it has selected the most protective standards possible. Although the Agency could have selected numerically more stringent standards, EPA concluded that more stringent standards would afford less protection to children because EPA believes that limited resources would be diluted and possibly diverted from children who are at greatest risk. The standards will also protect children by supporting implementation of other provisions of the national lead program, such as hazard disclosure prior to the sale or rental of most pre-1978 housing and evaluation and control of lead-based paint hazards and Federally-assisted and Federally owned housing prior to disposition.

I. National Technology Transfer and Amendment Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law No. 104-113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

The Agency has determined that there are no voluntary consensus standards for lead-based paint hazards. However, the Agency has, where appropriate, referred to voluntary consensus standards developed by such organizations as the American Society for Testing and Materials (ASTM) with respect to sampling and analytical methods.

J. Executive Order 12630

EPA has complied with Executive Order 12630, entitled *Governmental Actions and Interference with Constitutionally Protected Property Rights* (53 FR 8859, March 15, 1988), by examining the takings implications of this rule in accordance with the ''Attorney General's Supplemental Guidelines for the Evaluation of Risk and Avoidance of Unanticipated Takings'' issued under the Executive Order.

K. Executive Order 12988

In issuing this rule, EPA has taken the necessary steps to eliminate drafting errors and ambiguity, minimize potential litigation, and provide a clear legal standard for affected conduct, as required by section 3 of Executive Order 12988, entitled *Civil Justice Reform* (61 FR 4729, February 7, 1996).

VII. Submission to Congress and the Comptroller General

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a major rule may take effect, the Agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and the Comptroller General of the United States. EPA has submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the United States. This rule is a ''major rule'' as defined by 5 U.S.C. 804(2). A major rule cannot take effect until 60 days after date it is published in the **Federal Register** or is submitted to Congress whichever is later. This rule will take effect on March 6, 2001.

List of Subjects in 40 CFR Part 745

Environmental protection, Hazardous substances, Lead poisoning, Reporting and recordkeeping requirements.

Dated: December 22, 2000.

Carol M. Browner,

Administrator.

Therefore, 40 CFR part 745 is amended as follows:

PART 745—AMENDED

1. The authority citation for part 745 continues to read as follows:

Authority: 15 U.S.C. 2605, 2607, 2681–2692 and 42 U.S.C. 4852d.

2. By adding new subpart D to read as follows:

Subpart D—Lead-Based Paint Hazards

Sec.

Subpart D—Lead-Based Paint Hazards

§ 745.61 Scope and applicability.

(a) This subpart identifies lead-based paint hazards.

(b) The standards for lead-based paint hazards apply to target housing and child-occupied facilities.

(c) Nothing in this subpart requires the owner of property(ies) subject to these standards to evaluate the property(ies) for the presence of lead-based paint hazards or take any action to control these conditions if one or more of them is identified.

§ 745.63 Definitions.

The following definitions apply to part 745.

Arithmetic mean means the algebraic sum of data values divided by the number of data values (e.g., the sum of the concentration of lead in several soil samples divided by the number of samples).

Chewable surface means an interior or exterior surface painted with lead-based paint that a young child can mouth or chew. A chewable surface is the same as an ''accessible surface'' as defined in 42 U.S.C. 4851b(2)). Hard metal substrates and other materials that cannot be dented by the bite of a young child are not considered chewable.

Common area group means a group of common areas that are similar in design, construction, and function. Common area groups include, but are not limited to hallways, stairwells, and laundry rooms.

Concentration means the relative content of a specific substance contained within a larger mass, such as the amount of lead (in micrograms per gram or parts per million by weight) in a sample of dust or soil.

Deteriorated paint means any interior or exterior paint or other coating that is peeling, chipping, chalking or cracking, or any paint or coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Dripline means the area within 3 feet surrounding the perimeter of a building.

Friction surface means an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

Impact surface means an interior or exterior surface that is subject to damage by repeated sudden force such as certain parts of door frames.

Interior window sill means the portion of the horizontal window ledge that protrudes into the interior of the room.

Lead-based paint hazard means hazardous lead-based paint, dust-lead hazard or soil-lead hazard as identified in § 745.65.

Loading means the quantity of a specific substance present per unit of surface area, such as the amount of lead in micrograms contained in the dust collected from a certain surface area divided by the surface area in square feet or square meters.

Mid-yard means an area of a residential yard approximately midway between the dripline of a residential building and the nearest property boundary or between the driplines of a residential building and another building on the same property.

Play area means an area of frequent soil contact by children of less than 6 years of age as indicated by, but not limited to, such factors including the following: the presence of play equipment (e.g., sandboxes, swing sets, and sliding boards), toys, or other children's possessions, observations of play patterns, or information provided by parents, residents, care givers, or property owners.

Residential building means a building containing one or more residential dwellings.

Room means a separate part of the inside of a building, such as a bedroom, living room, dining room, kitchen, bathroom, laundry room, or utility room. To be considered a separate room, the room must be separated from adjoining rooms by built-in walls or archways that extend at least 6 inches from an intersecting wall. Half walls or bookcases count as room separators if built-in. Movable or collapsible partitions or partitions consisting solely of shelves or cabinets are not considered built-in walls. A screened in porch that is used as a living area is a room.

Soil sample means a sample collected in a representative location using ASTM E1727, ''Standard Practice for Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques,'' or equivalent method.

Weighted arithmetic mean means the arithmetic mean of sample results weighted by the number of subsamples in each sample. Its purpose is to give influence to a sample relative to the surface area it represents. A single surface sample is comprised of a single subsample. A composite sample may contain from two to four subsamples of the same area as each other and of each single surface sample in the composite. The weighted arithmetic mean is obtained by summing, for all samples, the product of the sample's result multiplied by the number of subsamples in the sample, and dividing the sum by the total number of subsamples contained in all samples. For example, the weighted arithmetic mean of a single surface sample containing 60 $\mu g/ft^2$, a composite sample (three subsamples) containing 100 $\mu g/ft^2$, and a composite sample (4 subsamples) containing 110 $\mu g/ft^2$ is 100 $\mu g/ft^2$. This result is based on the equation [60+(3*100)+(4*110)]/(1+3+4).

Window trough means, 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. The window trough is sometimes referred to as the window ''well.''

Wipe sample means a sample collected by wiping a representative surface of known area, as determined by ASTM E1728, ''Standard Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques, or equivalent method, with an acceptable wipe material as defined in ASTM E 1792, ''Standard Specification for Wipe Sampling Materials for Lead in Surface Dust.''

§ 745.65 Lead-based paint hazards.

(a) *Paint-lead hazard.* A paint-lead hazard is any of the following:

(1) Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, or floor) are equal to or greater than the dust-lead hazard levels identified in paragraph (b) of this section.

(2) Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame.

(3) Any chewable lead-based painted surface on which there is evidence of teeth marks.

(4) Any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(b) *Dust-lead hazard.* A dust-lead hazard is surface dust in a residential dwelling or child-occupied facility that contains a mass-per-area concentration of lead equal to or exceeding 40 $\mu g/ft^2$ on floors or 250 $\mu g/ft^2$ on interior window sills based on wipe samples.

(c) *Soil-lead hazard.* A soil-lead hazard is bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million ($\mu g/g$) in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples.

(d) *Work practice requirements.* Applicable certification, occupant protection, and clearance requirements and work practice standards are found in regulations issued by EPA at 40 CFR part 745, subpart L and in regulations issued by the Department of Housing and Urban Development (HUD) at 24 CFR part 35, subpart R. The work practice standards in those regulations do not apply when treating paint-lead hazards of less than:

(1) Two square feet of deteriorated lead-based paint per room or equivalent,

(2) Twenty square feet of deteriorated paint on the exterior building, or

(3) Ten percent of the total surface area of deteriorated paint on an interior or exterior type of component with a small surface area.

3. In § 745.223, by removing the definitions for ''Lead-contaminated dust'' and ''Lead-contaminated soil,'' and by revising paragraph (1) of the definition of ''Abatement,'' to read as follows:

§ 745.223 Definitions.

* * * * *

Abatement * * *

(1) The removal of paint and dust, the permanent enclosure or encapsulation of lead-based paint, the replacement of painted surfaces or fixtures, or the removal or permanent covering of soil, when lead-based paint hazards are present in such paint, dust or soil; and

* * * * *

4. In § 745.227, by revising paragraphs (d)(4), (d)(5), (d)(6) introductory text, (d)(7), (e)(7)(i), (e)(7)(ii), (e)(8)(ii), (e)(8)(v)(A), (e)(8)(v)(B), (e)(8)(vii), by redesignating paragraph (d)(8)(ii) as paragraph (d)(8)(iii) and paragraph (h) as paragraph (i), and by adding paragraphs (d)(8)(ii), (e)(8)(viii), and (h) to read as follows:

§ 745.227 Work practice standards for conducting lead-based paint activities: target housing and child-occupied facilities.

* * * * *

(d) * * *

(4) The following surfaces which are determined, using documented methodologies, to have a distinct painting history, shall be tested for the presence of lead:

(i) Each friction surface or impact surface with visibly deteriorated paint; and

(ii) All other surfaces with visibly deteriorated paint.

(5) In residential dwellings, dust samples (either composite or single-surface samples) from the interior window sill(s) and floor shall be collected and analyzed for lead concentration in all living areas where one or more children, age 6 and under, are most likely to come into contact with dust.

(6) For multi-family dwellings and child-occupied facilities, the samples required in paragraph (d)(4) of this section shall be taken. In addition, interior window sill and floor dust samples (either composite or single-surface samples) shall be collected and analyzed for lead concentration in the following locations:

* * * * *

(7) For child-occupied facilities, interior window sill and floor dust samples (either composite or single-surface samples) shall be collected and analyzed for lead concentration in each room, hallway or stairwell utilized by one or more children, age 6 and under, and in other common areas in the child-occupied facility where one or more children, age 6 and under, are likely to come into contact with dust.

(8) * * *

(ii) The rest of the yard (i.e., non-play areas) where bare soil is present.

* * * * *

(e) * * *

(7) * * *

(i) If the soil is removed:

(A) The soil shall be replaced by soil with a lead concentration as close to local background as practicable, but no greater than 400 ppm.

(B) The soil that is removed shall not be used as top soil at another residential property or child-occupied facility.

(ii) If soil is not removed, the soil shall be permanently covered, as defined in § 745.223.

(8) * * *

(ii) Following the visual inspection and any post-abatement cleanup required by paragraph (e)(8)(i) of this section, clearance sampling for lead in dust shall be conducted. Clearance sampling may be conducted by employing single-surface sampling or composite sampling techniques.

* * * * *

(v) * * *

(A) After conducting an abatement with containment between abated and unabated areas, one dust sample shall be taken from one interior window sill and from one window trough (if present) and one dust sample shall be taken from the floors of each of no less than four rooms, hallways or stairwells within the containment area. In addition, one dust sample shall be taken from the floor outside the containment area. If there are less than four rooms, hallways or stairwells within the containment area, then all rooms, hallways or stairwells shall be sampled.

(B) After conducting an abatement with no containment, two dust samples shall be taken from each of no less than four rooms, hallways or stairwells in the residential dwelling or child-occupied facility. One dust sample shall be taken from one interior window sill and window trough (if present) and one dust sample shall be taken from the floor of each room, hallway or stairwell selected. If there are less than four rooms, hallways or stairwells within the residential dwelling or child-occupied facility then all rooms, hallways or stairwells shall be sampled.

* * * * *

(vii) The certified inspector or risk assessor shall compare the residual lead level (as determined by the laboratory analysis) from each single surface dust sample with clearance levels in paragraph (e)(8)(viii) of this section for lead in dust on floors, interior window sills, and window troughs or from each composite dust sample with the applicable clearance levels for lead in dust on floors, interior window sills, and window troughs divided by half the number of subsamples in the composite sample. If the residual lead level in a single surface dust sample equals or exceeds the applicable clearance level or if the residual lead level in a composite dust sample equals or exceeds the applicable clearance level divided by half the number of subsamples in the composite sample, the components represented by the failed sample shall be recleaned and retested.

(viii) The clearance levels for lead in dust are 40 $\mu g/ft^2$ for floors, 250 $\mu g/ft^2$ for interior window sills, and 400 $\mu g/ft^2$ for window troughs.

* * * * *

(h) *Determinations.* (1) Lead-based paint is present:

(i) On any surface that is tested and found to contain lead equal to or in excess of 1.0 milligrams per square centimeter or equal to or in excess of 0.5% by weight; and

(ii) On any surface like a surface tested in the same room equivalent that has a similar painting history and that is found to be lead-based paint.

(2) A paint-lead hazard is present:

(i) On any friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill or floor) are equal to or greater than the dust hazard levels identified in § 745.227(b);

(ii) On any chewable lead-based paint surface on which there is evidence of teeth marks;

(iii) Where there is any damaged or otherwise deteriorated lead-based paint on an impact surface that is cause by

impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame; and

(iv) If there is any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(3) A dust-lead hazard is present in a residential dwelling or child occupied facility:

(i) In a residential dwelling on floors and interior window sills when the weighted arithmetic mean lead loading for all single surface or composite samples of floors and interior window sills are equal to or greater than 40 μg/ft^2 for floors and 250 μg/ft^2 for interior window sills, respectively;

(ii) On floors or interior window sills in an unsampled residential dwelling in a multi-family dwelling, if a dust-lead hazard is present on floors or interior window sills, respectively, in at least one sampled residential unit on the property; and

(iii) On floors or interior window sills in an unsampled common area in a multi-family dwelling, if a dust-lead hazard is present on floors or interior window sills, respectively, in at least one sampled common area in the same common area group on the property.

(4) A soil-lead hazard is present:

(i) In a play area when the soil-lead concentration from a composite play area sample of bare soil is equal to or greater than 400 parts per million; or

(ii) In the rest of the yard when the arithmetic mean lead concentration from a composite sample (or arithmetic mean of composite samples) of bare soil from the rest of the yard (i.e., non-play areas) for each residential building on a property is equal to or greater than 1,200 parts per million.

5. In § 745.325, by revising paragraphs (d)(2)(iii)(A) and (d)(2)(iii)(B), by redesignating (d)(2)(iv) and (d)(2)(v) as (d)(2)(v) and (d)(2)(vi), respectively, and by adding paragraphs (d)(2)(iii)(C), (d)(2)(iii)(D), (d)(2)(iv), and (e), to read as follows:

§ 745.325 Lead-based paint activities: State and Tribal program requirements.

* * * * *

(d) * * *

(2) * * *

(iii) * * *

(A) An assessment, including a visual inspection, of the physical characteristics of the residential dwelling or child-occupied facility;

(B) Environmental sampling for lead in paint, dust, and soil;

(C) Environmental sampling requirements for lead in paint, dust, and soil that allow for comparison to the standards for lead-based paint hazards established or revised by the State or Indian Tribe pursuant to paragraph (e) of this section; and

(D) A determination of the presence of lead-based paint hazards made by comparing the results of visual inspection and environmental sampling to the standards for lead-based paint hazards established or revised by the State or Indian Tribe pursuant to paragraph (e) of this section.

(iv) The program elements required in paragraph (d)(2)(iii)(C) and (d)(2)(iii)(D) of this section shall be adopted in accordance with the schedule for the demonstration required in paragraph (e) of this section.

* * * * *

(e) The State or Indian Tribe must demonstrate that it has standards for identifying lead-based paint hazards and clearance standards for dust, that are at least as protective as the standards in § 745.227 as amended on February 5, 2001. A State or Indian Tribe with such a section 402 program approved before February 5, 2003 shall make this demonstration no later than the first report submitted pursuant to § 745.324(h) on or after February 5, 2003. A State or Indian Tribe with such a program submitted but not approved before February 5, 2003 may make this demonstration by amending its application or in its first report submitted pursuant to § 745.324(h). A State or Indian Tribe submitting its program on or after February 5, 2003 shall make this demonstration in its application.

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