



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-3000

OFFICE OF LEAD HAZARD CONTROL
AND HEALTHY HOMES

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| Policy Guidance Number: 2017-01 | Date: January 31, 2017 |
| Subject: | Revised Dust-Lead Action Levels for Risk Assessment and Clearance; Clearance of Porch Floors |
| Status: | Current |
| Applicability: | All Lead-Based Paint Hazard Control (LBPHC) and Lead Hazard Reduction (LHRD) Demonstration Grantees |
| Related Guidance: | |
| Comments: | |

Summary:

The Office of Lead Hazard Control and Healthy Homes (OLHCHH) is issuing this policy guidance to establish new and more stringent requirements for dust-lead action levels for its Lead-Based Paint Hazard Control (LBPHC) and Lead Hazard Reduction (LHRD) Demonstration Grantees to use in conducting lead-based paint hazard risk assessments and for clearing units following intervention. This requirement is supported by scientific evidence on the adverse effects of lead exposure at any measurable blood-lead level in children as well as the evidence on the feasibility of lower clearance levels being routinely achieved by lead hazard control programs.

Effective April 1, 2017, all existing OLHCHH LBPHC and LHRD grantees will use the following lead dust hazard and clearance action levels (or lower levels if required by their state regulations):

New Lead Dust Hazard Action Levels:

Floors: $\geq 10 \mu\text{g}/\text{ft}^2$

Window Sills: $\geq 100 \mu\text{g}/\text{ft}^2$

New Lead Clearance Action Levels:

Interior Floors: $< 10 \mu\text{g}/\text{ft}^2$

Porch Floors: $< 40 \mu\text{g}/\text{ft}^2$

Window Sills: $< 100 \mu\text{g}/\text{ft}^2$

Window Troughs: $< 100 \mu\text{g}/\text{ft}^2$

We are also adding a porch floor clearance action level because of a study that showed porches had high levels of lead dust after abatement in the home and that the action level is readily attainable.¹

In order to ensure a smooth transition and allow for some time for issues that may arise, (such as arranging laboratory compliance) this policy notice provides for a transition period of two months for the adoption of these action levels. After the transition phase in period, all grantees are expected to be in full compliance using the new action levels for risk assessments and clearance.

Note that the required use of these action levels applies only to the OLHCHH's LBPHC and LHRD grants (authorized by section 1011 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 ("Title X")), and does not constitute rulemaking under HUD's Lead Safe Housing Rule (LSHR; 24 CFR 35, subparts B – R; authorized by section 1012 of Title X) or EPA's Lead-Based Paint Hazards rule nor their Work Practice Standards for Conducting Lead-Based Paint Activities rule (40 CFR §§ 745.65 and 745.227, authorized by section 1021 of Title X, which created section 403 of the Toxic Substances Control Act), respectively.

Background:

The current federal lead dust hazard and clearance standards (see below) were incorporated into regulations by the U.S. EPA and became effective on March 1, 2001.² Since these regulations were promulgated, additional evidence has been established supporting both the need to reduce these dust-lead standards as well as the feasibility of attaining substantially lower lead dust loadings on floors, sills and troughs when clearing units following the completion of lead hazard control activities.

Current Federal Dust-Lead Standards

1. Lead Hazard Standards

Floors: $\geq 40 \mu\text{g}/\text{ft}^2$

Window Sills: $\geq 250 \mu\text{g}/\text{ft}^2$

2. Lead Clearance Standards

Floors: $< 40 \mu\text{g}/\text{ft}^2$

Window Sills: $< 250 \mu\text{g}/\text{ft}^2$

Window Troughs: $< 400 \mu\text{g}/\text{ft}^2$

¹ Wilson J, Dixon SL, Jacobs DE, Akoto J, Korfmacher KS, Breyse J. (2015) An Investigation into Porch Dust Lead Levels, *Environmental Research*, 137, 129-135, <https://www.scribd.com/document/254001764/An-investigation-into-porch-lead-levels>.

² EPA. Lead; Identification of Dangerous Levels of Lead. Final rule. 66 FR 1205. January 5, 2001. <https://www.federalregister.gov/documents/2001/01/05/01-84/lead-identification-of-dangerous-levels-of-lead>. See, especially, 40 CFR 745.65(b) and 745.227(h)(3).

In 2009, the U.S. EPA was petitioned to lower the dust-lead standards to 10 $\mu\text{g}/\text{ft}^2$ for floors and 100 $\mu\text{g}/\text{ft}^2$ for window sills.³ In supporting this request, the petitioners cited HUD-sponsored research that examined the relationship between dust-lead surface loadings and children's blood-lead levels. The study used data (dust samples from floors and sills and children's blood-lead) collected during the National Health and Nutrition Examination Survey (NHANES) from 1999-2004.^{4,5} The study results supported the need to reduce the current clearance standards, finding that more than 95% of children would have blood-lead levels < 10 $\mu\text{g}/\text{dL}$ if floors and sills had dust-lead loadings of 10 $\mu\text{g}/\text{ft}^2$ and 100 $\mu\text{g}/\text{ft}^2$, respectively.

Further supporting the desirability for lower hazard and clearance standards is research demonstrating that children suffer developmental deficits even at blood lead levels below 5 $\mu\text{g}/\text{dL}$. The National Toxicology Program (NTP) published their findings on the health effects of low-level blood lead concentrations in 2012.⁶ The NTP concluded that there is sufficient evidence that blood lead levels less than 10 $\mu\text{g}/\text{dL}$ are associated with adverse health effects in children. This evidence prompted the Centers for Disease Control and Prevention (CDC) to replace the blood lead "level of concern" for children (10 $\mu\text{g}/\text{dL}$ at the time) with a "reference value" (currently 5 $\mu\text{g}/\text{dL}$).⁷ The reference value represents the 97.5th percentile of blood-lead levels in U.S. children aged 1-5 years, based on data from the National Health and Nutrition Examination Survey.

Research sponsored by the OLHCHH supports the feasibility of lead hazard control grant programs routinely achieving lower dust-lead clearance levels. A survey of HUD Lead Hazard Control Program grantees was conducted in 2014 to collect data related to the clearance levels that grantees routinely obtained in units following completion of lead hazard control activities. The survey (conducted for HUD by QuanTech, Inc.) collected data from 98 OLHCHH LBPFC and LHRD grantees.⁸ The data collected represented 1,552 housing units and a total of 7,211 floor clearance sample, 4,893 windowsill clearance samples, and 2,787 window trough clearance

³ http://www.nchh.org/Portals/0/Contents/EPA_Lead_Standards_Petition_Final.pdf

⁴ Gaitens JM, Dixon SL, Jacobs DE, Nagaraja J, Strauss W, Wilson JW, et al. Exposure of U.S. children to residential dust lead, 1999–2004: I. Housing and demographic factors. *Environmental Health Perspectives* 117:461–467, 2009, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2661918/pdf/ehp-117-461.pdf>.

⁵ Dixon SL, Gaitens JM, Jacobs DE et al. Exposure of U.S. children to residential dust lead, 1999-2004: II: The contribution of lead-contaminated dust to children's blood lead levels. *Environmental Health Perspectives* 117(3):468-474, 2009, <http://ehp.niehs.nih.gov/wp-content/uploads/117/3/ehp.11918.pdf>.

⁶ US Department of Health and Human Services (US DHHS). Monograph: Health effects of low-level lead. 2012. US DHHS, National Toxicology Program. http://ntp.niehs.nih.gov/ntp/ohat/lead/final/monographhealtheffectslowlevellead_newissn_508.pdf.

⁷ *Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention*, Report of the Advisory Committee on Childhood Lead Poisoning Prevention of the Centers for Disease Control and Prevention, January 4, 2012, www.cdc.gov/nceh/lead/acclpp/final_document_030712.pdf, also, see *CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention"*, June 7, 2012, www.cdc.gov/nceh/lead/acclpp/cdc_response_lead_exposure_recs.pdf.

⁸ QuanTech, Inc. Lead Hazard Control Clearance Survey, Final Report. October 2015, http://portal.hud.gov/hudportal/documents/huddoc?id=ClearanceSurvey_24Oct15.pdf.

samples. Analysis of these data indicated that for final floor clearance sample results approximately 85% were at or below 10 $\mu\text{g}/\text{ft}^2$, 97% of final windowsill clearance results were at or below 100 $\mu\text{g}/\text{ft}^2$, and 94% of final window trough clearance results were at or below 100 $\mu\text{g}/\text{ft}^2$. These results support the feasibility of grantees routinely attaining dust-lead action levels well below the current federal clearance standards, i.e., a reduction of the current clearance standards for interior floors from 40 $\mu\text{g}/\text{ft}^2$ to an action level of 10 $\mu\text{g}/\text{ft}^2$, for window sills from 250 $\mu\text{g}/\text{ft}^2$ to an action level of 100 $\mu\text{g}/\text{ft}^2$, and for window troughs from 400 $\mu\text{g}/\text{ft}^2$ to an action level of 100 $\mu\text{g}/\text{ft}^2$. HUD does not believe that this change would be overly burdensome to grantees. As demonstrated when the clearance levels have changed previously, contractors adjust their performance behavior reasonably quickly.

Table 1. Attainable Clearance Levels by OLHCHH Grantees (QuanTech, 2015)

| Surface | EPA Clearance Level ($\mu\text{g}/\text{ft}^2$) | Grantee Obtained Clearance Level ($\mu\text{g}/\text{ft}^2$) | Clearance Obtained |
|----------------|---|--|--------------------|
| Floors | 40 | 10 | 85 % |
| Window Sills | 250 | 100 | 97 % |
| Window Troughs | 400 | 100 | 94 % |

In addition, OLHCHH-supported research has demonstrated that the lower lead dust levels could be maintained for an extended period following the completion of lead hazard control activities.⁹ In this study, 426 dwellings that had received lead hazard control interventions by one of four HUD LBPHC grantees were sampled six years following clearance of the units. Average dust-lead loadings in these units were found to be 5 $\mu\text{g}/\text{ft}^2$ for floors and 73 $\mu\text{g}/\text{ft}^2$ for sills.

Reminder – all lead hazard control work, inspections and risk assessments must be performed in compliance with the “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing” (2012 Edition, “*Guidelines*”),¹⁰ and EPA and/or state regulations (40 CFR 745, subparts L and Q, respectively).

Ensuring that Laboratories Can Achieve the New Action Level Requirements

EPA-recognized lead laboratories are required to determine a Method Detection Limit (MDL) for their lead analyses. For this HUD Policy Guidance, the MDL must be no larger than half the Method Reporting Limit (MRL) for the analysis. Therefore, in order to report results as being below a MRL of 10 $\mu\text{g}/\text{ft}^2$ for floors, a laboratory must be able to demonstrate an MDL of 5 $\mu\text{g}/\text{ft}^2$ or less for floors. (Note: Terminology varies and Method Reporting Limit and Method Detection Limit may also be referred to as Quantitation Limit, Detection Limit, etc.) To avoid ambiguity, we prefer that laboratories report very low results as, e.g. “<10 $\mu\text{g}/\text{ft}^2$ ” (using the numerical value of the MRL for that sample’s analysis) and not as “None Detected,” “ND,” “None Found,” or similar wording. An alternative approach for a laboratory to reach the

⁹ Wilson J, Pivetz T, Ashley P, Jacobs D, Strauss W, Menkedick J, Dixon S, Tsai HS, Brown V, Friedman W, Galke W, Clark S. Evaluation of HUD-Funded Lead Hazard Control Treatments at Six Years Post-Intervention, *Environmental Research* 102(2):237-48, 2006.

¹⁰ http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/lbp/hudguidelines

10 $\mu\text{g}/\text{ft}^2$ MRL is for your risk assessors to conduct floor dust sampling of 2 ft^2 with a single wipe, rather than the standard minimum of 1 ft^2 . If you use this alternative approach, your risk assessors and laboratory will need to coordinate carefully so that the sample area is used correctly; you should facilitate that discussion. If you use templates for floor sampling, you will have to obtain new 2 ft^2 templates to adopt this larger-sampling area approach, or your risk assessors may move a 1 ft^2 template, being careful not to touch dust on either area to be sampled. You should also ensure that your dust wipes are sufficiently durable to sample 2 ft^2 .

Porch Floor Clearance:

Wilson et. al. (footnote 1, above), in work supported by the OLHCHH, reported that lead dust loading on porch floors increased when lead hazard control work was performed in a home and no work was performed on the porch. Since lead dust on porch floors can expose children either by direct contact or through track-in to the home, and in consideration of the complex recontamination situation of porch floors, we recommend the porch floor clearance action level of $<40 \mu\text{g}/\text{ft}^2$ be implemented after lead hazard control work in the home. Grantees should consider also clearing porch floors that are smooth and cleanable using the interior clearance action level of $<10 \mu\text{g}/\text{ft}^2$, particularly if there is evidence that children frequent the area.

Implementation

All LBPHC and LHRD grantees shall use the new lead dust action levels starting April 1, 2017. The timeline in Table 2 is suggested; earlier compliance by grantees is encouraged:

Month 1: Make a plan to implement the new dust lead hazard standards. Inform laboratories, consultants and contractors of the upcoming changes. Discuss the results of the Lead Clearance Survey (footnote 8, above) with laboratories, consultants and contractors (and in-house lead risk assessors) that an estimated 85% of final floor clearance results were at or below $10 \mu\text{g}/\text{ft}^2$, at least 97% of final windowsill clearance results were at or below $100 \mu\text{g}/\text{ft}^2$, and at least 94% of final window trough clearance results were at or below $100 \mu\text{g}/\text{ft}^2$.

Months 1-2: Work with laboratories for them to establish the required Method Detection Limit of $5 \mu\text{g}/\text{ft}^2$ for floor dust lead analyses. This is half of the required sensitivity of the method to reliably show that floor samples are less than the action level (here, $<10 \mu\text{g}/\text{ft}^2$), as required for National Lead Laboratory Accreditation Program (NLLAP) recognized laboratories. If a laboratory cannot or chooses not to meet the new requirement for dust wipes that have been used to sample 1 ft^2 , seek another laboratory or specify that your risk assessors conduct floor dust sampling of 2 ft^2 for a single dust wipe, rather than 1 ft^2 . A list of NLLAP-recognized laboratories is linked from EPA's NLLAP webpage, www.epa.gov/lead/national-lead-laboratory-accreditation-program-nllap.

Month 2: Obtain agreement with any lead hazard control contractors that they will meet the new action levels. Obtain agreement with consultants that they will use the new hazard action levels and clearance action levels in their work. Obtain agreement with laboratories that they will use the new hazard action levels and clearance action levels in their analyses. (*Note that there is no window trough or porch floor standard or action level for risk assessment.*)

Month 3: Implement the new action levels for risk assessments and clearance.

Table 2. Implementation timeline.

| TASK | Month | Responsibility |
|--|-------|--------------------------------------|
| 1. Make a plan to implement the new dust lead hazard standards. | 1 | Project Director/ Project Manager |
| 2. Inform staff, sub-grantees, partners, consultants, lead-based paint inspectors and risk assessors, and lead hazard control contractors of the new dust lead hazard action levels. Discuss the results of the Lead Clearance Survey with laboratories, consultants and contractors (and in-house lead risk assessors) that the new action levels are attainable. | 1 | Project Manager |
| 3. Discuss with laboratories to need to establish the required MDL of 5 $\mu\text{g}/\text{ft}^2$ (or less) and MRL of 10 $\mu\text{g}/\text{ft}^2$ (or less) for floor dust-lead analyses. | 1 & 2 | Project Director/ Project Manager |
| 4. Obtain agreement with lead hazard control contractors, consultants and laboratories that they will meet and use the new action levels. | 2 | Project Manager |
| 5. Implement the new action levels for risk assessments and clearance. | 3 | Project Manager |