OFFICE of INSPECTOR GENERAL
UNITED STATES DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

# Risk Indicators of Lead-Based Paint Hazards in Public Housing Agencies

**2021-OE-0011a**

**September 28, 2022**

**Office of Evaluation, Program Evaluations Division | Office of Inspector General**
**U.S. Department of Housing and Urban Development**

**Date:** September 28, 2022

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**Subject:** Risk Indicators of Lead-Based Paint Hazards in Public Housing Agencies (2021-OE-0011a)

Please see the attached final report on risk indicators of lead-based paint hazards in U.S. Department of Housing and Urban Development-assisted properties owned and managed by public housing agencies. We do not offer any recommendations in this report.

I greatly appreciate the assistance you and your staff provided throughout the evaluation. The report will be posted to our website within 3 days. Please contact Christopher Backley, Director of the Program Evaluations Division, at 202-731-9804 or cbackley@hudoig.gov with any questions.

Attachment

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# Executive Summary

## RISK INDICATORS OF LEAD-BASED PAINT HAZARDS IN PUBLIC HOUSING AGENCIES | 2021-OE-0011a

## Why We Did This Evaluation

Previous U.S. Department of Housing and Urban Development (HUD), Office of Inspector General (OIG), and U.S. Government Accountability Office (GAO) reviews have recommended that HUD improve its oversight and monitoring of lead-based paint hazards in publicly assisted housing.

We identified "eliminating hazards in HUD-assisted housing" in 2022 as a top management challenge for HUD, in large part due to the significant challenges HUD faces in controlling and addressing lead-related hazards.

In June 2022, GAO identified three open recommendations related to strengthening processes to address lead paint hazards as priorities for HUD.

We conducted this evaluation to identify risk indicators of potential lead-based paint hazards in public housing and to use those indicators to assess the risk of lead-based paint exposure across regions of the country. This is an interim report, and we are conducting additional work that will address the effectiveness of HUD's

1. Processes for addressing cases of children residing in public housing with elevated blood lead levels (EBLL).

2. EBLL and lead-based paint response tracking processes in providing accurate and complete data.

The results of this work will assist HUD in its efforts to enhance its lead-hazard oversight and inform future HUD OIG oversight efforts.

## Results of Evaluation

According to the Centers for Disease Control and Prevention (CDC), lead-based paint and lead-contaminated dust are some of the most widespread and hazardous sources of lead exposure for young children in the United States. When lead-based paint peels and cracks, it results in lead-contaminated paint chips and dust. Children can be poisoned if they chew on surfaces coated with lead-based paint, eat flaking paint chips, or eat or breathe in lead dust. CDC has reported that there is no safe blood lead level in people and there is no cure for lead poisoning, which is why it is important to prevent exposure to lead, especially among young children. Approximately 126,380 public housing buildings and 696,260 units were built before 1978, which was the year the Federal Government banned lead-based paint.

As of March 2022, HUD's Real Estate Assessment Center—an office within HUD's Office of Public and Indian Housing—was establishing the Environmental Shared Services office (ESS) to improve its risk assessment and inspection capabilities for health and safety hazards, including lead-based paint hazards.

ESS will provide insight into potential and existing environmental hazards, compliance issues, and data gaps to improve HUD's decision making and facilitate allocating resources to drive effective hazard management strategies. As part of its purpose, ESS will rank risks related to four environmental hazards—carbon monoxide, mold, lead, and radon. In establishing its risk-ranking model, ESS identified five indicators for its lead risk ranking.

Using the best available data collected from both HUD and sources external to HUD, we identified nine indicators of potential risk for lead-based paint hazards in public housing:

1. American Healthy Homes Survey II estimated regional percentage of lead-based paint hazards.
2. Number and percentage of public housing buildings in the region constructed before 1978.[1]
3. Number of recorded children with EBLLs living in public housing.
4. Number of substandard or troubled Public Housing Assessment System scores.
5. Number of public housing agencies (PHA) on the Lead-Based Paint Response tracker.
6. Amount of funding received from HUD's Lead-Based Paint Capital Fund or Housing Related Hazards Capital Fund grant programs.
7. Amount of funding received from CDC childhood lead poisoning prevention programs.
8. Number and percentage of confirmed EBLLs in tested children greater than 5 µg/dL, as reported by CDC.
9. Lead Exposure Risk Index.

Based on our analysis of these nine risk indicators, we identified five HUD regions and six States within those regions—New York, Pennsylvania, Georgia, Kentucky, Illinois, and Texas—with the most potential risk of having PHAs with lead-based paint hazards. In addition, our analysis identified eight other States that, while not measuring as the most at-risk State in their respective regions, also have a higher potential risk of having lead-based paint hazards. Although HUD has identified its own risk indicators for lead-based paint hazards, of which four overlap with our indicators, this report may be helpful to HUD as it continues identifying and evaluating risk indicators and evaluating how well those indicators are identifying potential issues of lead-based paint in HUD-assisted public housing.

[1] * The indicator description was corrected to differentiate between housing units and buildings.

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# Introduction

## OBJECTIVES

The first objective of this evaluation was to use available information sources to identify U.S. Department of Housing and Urban Development (HUD)-assisted properties owned and managed by public housing agencies (PHA) with the most potential risk of having lead-based paint hazards. In this interim report, we used indicators to identify regions and then States with the most potential risk of having PHAs with lead-based paint hazards. We did this to illustrate how the indicators can help HUD identify locations with a potential risk of having lead-based paint hazards.

The evaluation team is conducting additional work that will address the following objectives:

1. Determine the effectiveness of HUD's processes for addressing cases of children residing in public housing with elevated blood lead levels (EBLL).

2. Determine the effectiveness of the EBLL and lead-based paint response tracking processes in providing accurate and complete data.[2]

## BACKGROUND

Both HUD and HUD's Office of Inspector General (OIG) have strategic goals related to lead-based paint hazards. HUD's Fiscal Year (FY) 2022-2026 Strategic Plan has a strategic objective to "strengthen environmental justice" and includes a priority goal to protect families from lead-based paint and other health hazards by making an additional 20,000 units of at-risk housing units healthy and lead safe by September 30, 2023. In addition, HUD's FY 2022 Annual Performance Plan and FY 2020 Annual Performance Report state that one of HUD's priority and strategic goals is to protect vulnerable populations from and to remove lead-based paint hazards.[3] HUD OIG identified "eliminating hazards in HUD-assisted housing" as a top management challenge facing HUD in FY 2022.[4]

### Lead-Based Paint Is a Health Hazard

According to the Centers for Disease Control and Prevention (CDC), lead-based paint and lead-contaminated dust are the most widespread and hazardous sources of lead exposure for young children in the United States. When lead paint peels and cracks, it results in lead paint chips and dust. Exposure to lead can seriously harm a child's health, particularly if the child is younger than age 6. Children may be exposed to lead poisoning if they chew on surfaces coated with lead-based paint, such as windowsills and door edges; eat flaking lead-based paint chips; or eat or breathe in lead dust. CDC has linked lead poisoning to well-documented adverse effects, such as damage to the brain and nervous system; slowed growth and development; and problems pertaining to behavior, learning, hearing, and speech.

CDC has reported that no safe blood lead level in children exists and there is no cure for lead poisoning, which is why it is important to prevent exposure to lead, especially among children. In November 2020,

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2 We separated this evaluation into two reports to allow us to expedite the release of our initial results for the first objective.

3 HUD FY 2022 Annual Performance Plan and FY 2020 Annual Performance Report, September 9, 2021

4 HUD OIG Top Management Challenges Facing HUD in FY 2022, November 12, 2021

CDC approximated that 24 million housing units[5] in the United States had significant lead-based paint hazards, including deteriorated paint and lead-contaminated dust, and about 4 million of these units housed young children.

### HUD Issued the Lead Safe Housing Rule To Evaluate, Control, and Notify Occupants of Lead Hazards

In 1999, HUD issued the Lead Safe Housing Rule, which established procedures for evaluating whether lead-based paint hazards exist, controlling or eliminating the hazard if found, and then notifying occupants of any identified lead-based paint hazards and related remediation efforts.[6] The Rule applies, among other things, to housing built before 1978[7] that receives Federal assistance. The Rule established an EBLL threshold in children under the age of 6. In 2017, HUD amended the Rule by lowering the EBLL threshold from 20 micrograms of lead per deciliter of blood (µg/dL) to 5 µg/dL to match CDC guidance.[8]

If a child residing in public housing is diagnosed with an EBLL, CDC guidance states that families should report that diagnosis to the PHA. The PHA must then notify HUD of the EBLL, test the home and other potential sources of the child's lead exposure, and address any identified lead-based paint hazards.

### There Are Two HUD Program Offices With Lead-Related Responsibilities

There are two main program offices within HUD that have lead-related responsibilities for public housing: the Office of Public and Indian Housing (PIH) and the Office of Lead Hazard Control and Healthy Homes (OLHCHH). While PIH and OLHCHH collaborate on lead hazard work, PIH is responsible for oversight of PHA compliance, and OLHCHH is responsible for writing policy and providing guidance.

Within PIH, the Office of Field Operations (OFO) oversees and enforces PHAs' compliance with lead-based paint regulations for HUD's rental assistance programs. OFO is responsible for tracking children with EBLLs and monitoring PHAs' lead-based paint-related documentation, such as lead inspection reports and disclosure forms. OFO takes a risk-based approach to overseeing PHAs.

PIH's Real Estate Assessment Center (REAC) is responsible for inspecting the physical condition of public housing properties.[9] A PHA's Public Housing Assessment System (PHAS) score, of which the physical inspection consists of 40 percent, determines the frequency of future inspections. Depending on size and

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5 The U.S. Census Bureau defines a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters.

6 24 CFR (Code of Federal Regulations) part 35

7 In 1978, the Federal Government banned consumer uses of lead-based paint due to health concerns.

8 CDC introduced the 5 µg/dL blood lead "reference value" in 2012 to identify children with higher levels of lead in their blood compared to most children. The level is based on the 97.5th percentile of the blood lead values among U.S. children ages 1-5 years. The Lead Exposure and Prevention Advisory Committee voted on May 14, 2021, in favor of recommending that CDC update the reference value to 3.5 µg/dL based on 2015-2016 and 2017-2018 National Health and Nutrition Examination Survey data. Based on the data, children with blood lead levels at or above the 3.5 µg/dL reference value represent those at the top 2.5 percent with the highest blood lead levels.

9 For the purposes of this report, we use the term "property" to mean a HUD-assisted development, building, or unit.

performance designation,[10] PHAs get inspected every 1, 2, or 3 years.[11] REAC created and uses the Uniform Physical Condition Standards (UPCS) to establish a uniform objective protocol for performing physical inspections of all property types. The UPCS does not include protocols to inspect for lead hazards, however.[12] The inspectors review tenant files for two pieces of lead-related information for all properties built before 1978—whether a lead-based paint disclosure form exists and, if the property has been inspected for lead, whether a copy of the inspection report is in the files.[13] In addition, the inspections capture deficiencies related to observable peeling paint or other damaged exterior or interior surfaces in buildings, which are the most common sources of lead-based paint hazards. The reporting of such deficiencies is a way in which REAC may identify properties that are at risk of having lead-based paint hazards and is meant to trigger a response from OFO staff responsible for monitoring PHAs' compliance with HUD regulations, including the physical condition of their properties.

### HUD OIG and the U.S. Government Accountability Office Have Identified Issues Related to HUD's Lead Hazard Oversight

HUD OIG and the U.S. Government Accountability Office (GAO) have made several recommendations to HUD for improving the oversight and monitoring of lead-based paint hazards in publicly assisted housing. For example, a HUD OIG audit reported that HUD did not always obtain sufficient documentation to support that a PHA was either exempt from or complied with the Lead Safe Housing Rule.[14] HUD OIG recommended that HUD improve its Lead-Based Paint Response tracker. As of August 2022, the recommendations to improve the tracker and its controls remained unresolved and open.

GAO previously reported that HUD did not have a plan to mitigate and address risks related to noncompliance with lead hazard regulations by PHAs.[15] GAO also reported that HUD lacked detailed procedures for addressing noncompliance consistently and in a timely manner. Further, GAO found that HUD lacked comprehensive goals and performance measures for its lead hazard reduction efforts. GAO recommended that HUD address these and other lead-based paint-related findings, but seven

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10 All PHAs that receive a PHAS assessment receive a performance designation—high, standard, substandard, and troubled. The performance designation is based on the overall PHAS score.

11 Due to the COVID-19 pandemic, REAC paused physical inspections. Physical inspections resumed in June 2021, but the pause added to an existing inspection backlog. According to REAC officials, a plan is in place to reduce the backlog of physical inspections over the next 18 months.

12 According to REAC officials, REAC inspectors are not able to conduct a certified lead inspection as part of the typical REAC physical inspection of properties for two reasons. First, lead inspections are time consuming, and inspecting every HUD-assisted property for lead would prevent REAC from meeting annual inspection requirements. Second, State licensing requirements for lead inspectors are varied and nonreciprocal across certain States. As a result, the same people who conduct the REAC inspections cannot always conduct lead inspections.

13 A lead-based paint disclosure provides notice of the presence of any known lead-based paint or lead-based paint hazards to residents, as well as a lead warning statement that describes the risks of lead. Lead-based paint disclosure records must be retained for 3 years.

14 Audit Report 2020-CH-0003, HUD Lacked Adequate Oversight of Public Housing Agencies' Compliance With the Lead Safe Housing Rule, March 18, 2020

15 GAO-18-394, Lead Paint in Housing: HUD Should Strengthen Grant Processes, Compliance Monitoring, and Performance Assessment, June 2018

recommendations remained open as of July 2022. GAO included three of those recommendations in its 2022 priority recommendation letter to HUD.[16]

## SCOPE

The scope of this evaluation focused on potential lead-based paint hazards in the nearly 1 million public housing units subject to HUD oversight and physical inspections that the approximately 3,050 PHAs own and operate.[17]

## METHODOLOGY

We used the best available data collected from both HUD and sources external to HUD to

1. determine risk indicators of potential lead-based paint hazards in PHAs, based on their relevance to lead-based paint hazards, the Lead Safe Housing Rule, and public health data and research and

2. identify geographic regions and then States at a greater risk of lead hazard exposure, including lead-based paint, based on the equally weighted indicators.

We did not inspect properties or test for lead-based paint hazards. Testing is the only way to know for certain whether a property is free of lead-based paint hazards. For more detailed methodologies, see each lead-based paint hazard risk indicator in the Findings section below.

We completed this interim report under the authority of the Inspector General Act of 1978, as amended, and in accordance with the Quality Standards for Inspection and Evaluation issued by the Council of the Inspectors General on Integrity and Efficiency (January 2012).

## LIMITATIONS[18]

We relied on the best available data obtained from HUD personnel, HUD systems, and sources external to HUD.

We were unable to validate the accuracy of HUD's data, including the construction date of certain PHAs' developments, buildings, and units. Because HUD's Inventory Management System-Public Housing Information Center (IMS-PIC), the primary system that PIH uses to maintain records of public housing inventory owned by PHAs,[19] does not require the construction date field to be complete, PHAs may leave

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16 GAO-22-105539, HUD Priority Recommendations, June 2022. Priority recommendations are those that GAO believes warrant priority attention from the heads of key departments or agencies. Priority recommendation letters provide an update on the overall status of the implementation of GAO's recommendations and call attention to areas in which agencies should give high priority to open recommendations.

17 Public housing is intended to provide decent and safe rental housing for eligible low-income families, the elderly, and persons with disabilities. Not all of the nearly 1 million public housing units were built before 1978. However, information on the construction dates was incomplete and potentially inaccurate, as described in the Limitations section of this report.

18 * Updates were made to this section to describe our data limitation more accurately.

19 IMS-PIC is funded through Section 9 of the U.S. Housing Act of 1937.

it blank or enter the date incorrectly.[20] Other available information to corroborate construction dates and, therefore, the age of a development, building, or unit, is limited. We describe these data limitations in greater detail in the Findings section of this report.

[20] In a report from March 18, 2020, HUD OIG's Office of Audit recommended that OFO establish policies, procedures, and controls for validating and correcting construction dates of the public housing development in IMS-PIC and that if the information is determined to be inaccurate, HUD should work with the PHAs to update the data to ensure accuracy. This recommendation remained open as of August 2022.

# Findings

## HUD HAS MADE EFFORTS TO RESPOND TO PREVIOUSLY IDENTIFIED RISK ASSESSMENT ISSUES RELATED TO LEAD-BASED PAINT HAZARD OVERSIGHT

As we previously discussed, HUD OIG[21] and GAO[22, 23] reports identified issues related to HUD's lead-based paint hazard oversight. As of June 2022, REAC continued to establish a stand-alone Environmental Shared Services office (ESS) to improve its risk assessment and inspection capabilities for health and safety hazards, including lead-based paint hazards. ESS will provide insight into potential and existing environmental hazards, compliance issues, and data gaps to improve HUD's decision making and facilitate allocating resources for more effective hazard management strategies.

ESS's concept of operation plan identified a three-phase approach to developing the office's capacities. As part of its phase I strategy, ESS will rank risks related to four environmental hazards—carbon monoxide, mold, lead, and radon.[24] In establishing its risk ranking model, ESS has identified five indicators for its lead risk ranking:

1. Construction year of property.
2. Children under 6 years old on property.
3. EBLL cases of children under 6 years old.
4. UPCS historical unit inspection records as of 2015.[25]
5. UPCS historical common area inspection records as of 2015.[26]

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21 In March 2020, HUD OIG audit 2020-CH-003 reported that HUD did not always obtain sufficient documentation to support that a PHA was either exempt from or complied with the Lead Safe Housing Rule.

22 In June 2018, GAO 18-394 reported that HUD lacked (1) a plan to mitigate and address risks related to noncompliance with lead hazard regulations by PHAs, (2) detailed procedures for addressing noncompliance in a timely and consistent manner, and (3) comprehensive goals and performance measures for its lead hazard reduction efforts. HUD also had challenges identifying children with EBLLs.

23 In December 2020, GAO 21-55 reported that HUD had not conducted comprehensive or periodic assessments to identify risks or develop strategies to address identified risks to the Project-Based Rental Assistance program.

24 Phase I consisted of an initial data collection effort focused on gathering existing environmental data from all internal and external sources. It focused on developing processes for collecting, validating, and creating a data repository. The data collected were then analyzed and made available to stakeholders.

25 Unit inspections include visual assessments for damaged surfaces and deteriorated paint on ceilings, doors, floors, walls, and windows.

26 Common areas inspections include visual assessments for damaged surfaces and deteriorated paint on ceilings, doors, floors, walls, and windows.

The risk indicators are weighted differently, with the construction year receiving the most weight if the property was built before 1978. REAC officials demonstrated a risk ranking dashboard for lead hazards and estimated that it would be functional for ESS staff by August 2022.

ESS will expand environmental inspections and data collection efforts using internal staff and contractors as part of the concept of operation plan's phase 2. In phase 3, ESS will continue to compile a complete, usable database for its stakeholders and expand the services provided by the office. REAC estimates that the ESS concept of operation plan will be fully implemented by FY 2023.

Federal internal control standards state that management should assess risks to achieving objectives and develop an appropriate response to identified risks.[27] Although we did not assess HUD's progress in establishing ESS or its proposed lead hazard risk rankings, based on the risk indicators we identify in this report, HUD is in a better position to improve its lead-based paint hazard management strategies.

## NINE INDICATORS MAY ASSIST IN IDENTIFYING THE POTENTIAL RISK OF LEAD-BASED PAINT HAZARDS IN PUBLIC HOUSING

Using the best available data collected from both HUD and sources external to HUD, we identified nine indicators of potential risk for lead-based paint hazards. The first six risk indicators were based on HUD's internal data, while the last three indicators were based on data external to HUD. The risk indicators are

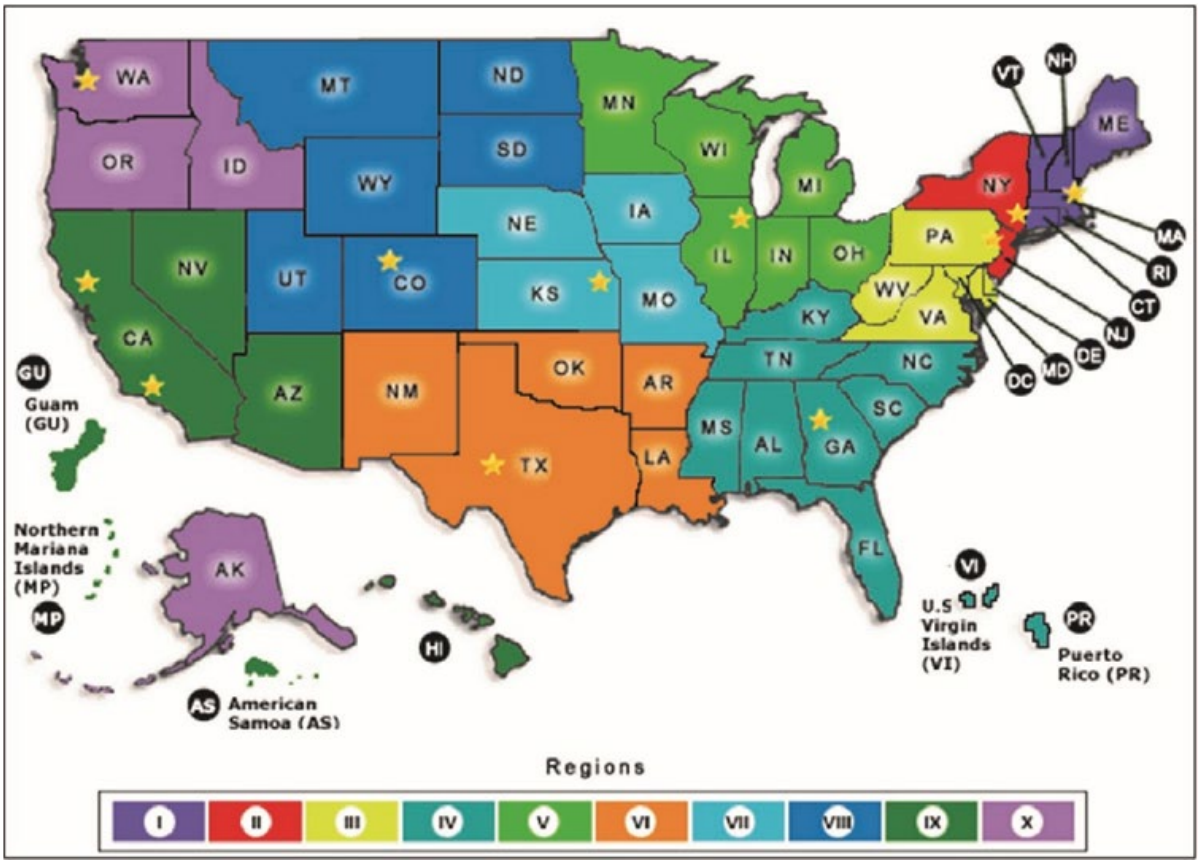
1. American Healthy Homes Survey II estimated regional percentage of lead-based paint hazards.
2. Number and percentage of public housing buildings in the region constructed before 1978.[28]
3. Number of recorded children with EBLLs living in public housing.
4. Number of substandard or troubled PHAS scores.
5. Number of PHAs on the Lead-Based Paint Response tracker.
6. Amount of funding received from HUD's Lead-Based Paint Capital Fund (LBPCF) or Housing-Related Hazards Capital Fund grant programs.
7. Amount of funding received from CDC childhood lead poisoning prevention programs.
8. Number and percentage of confirmed EBLLs in tested children greater than 5 µg/dL, as reported by CDC.
9. Lead Exposure Risk Index.

[27] GAO-14-704G, Standard for Internal Control in the Federal Government, September 2014

[28] * The indicator description was corrected to differentiate between housing units and buildings.

We analyzed the results of each indicator across HUD's 10 regions. For more information on HUD's 10 regions, see figure 1.

Figure 1 – HUD regions




Source: HUD's Local Offices, Regions Map

We describe each indicator and the results of our analysis of those indicators across HUD's regions below in more detail.

## Indicator 1: American Healthy Homes Survey II Estimated Regional Percentage of Lead-Based Paint Hazards

HUD has periodically conducted an American Healthy Homes Survey to measure levels of lead hazards, allergens, arsenic, pesticides, and mold in homes across the United States. HUD most recently conducted the American Healthy Homes Survey II from March 2018 to June 2019.[29] Of the approximated 117.5 million eligible permanent housing units in the United States where children may live, a sample of 2,315

[29] Previously, HUD conducted the first American Healthy Homes Survey from 2005 to 2006. Before that, HUD conducted the National Survey of Lead and Allergens in Housing from 1998 to 1999.

housing units was selected. Ultimately, 703 completed the survey.[30] Based on the survey results, HUD estimated the percentage of housing units with significant lead-based paint hazards in each U.S. Census Bureau region. While the U.S. Census Bureau's regions differ from HUD's regions, we compared the two by determining which HUD region aligned with each U.S. Census Bureau region.

The American Healthy Homes Survey II estimated that 44.2 percent of the housing stock in the Northeast, which encompasses all of HUD Regions I and II, as well as Pennsylvania from HUD Region III, had significant lead-based paint hazards. This was followed by the Midwest, with an estimated 35.6 percent of housing stock with lead-based paint hazards. The Midwest includes HUD Regions V, VII, and two States (North and South Dakota) from Region VIII. See table 1 for the American Healthy Homes Survey II's estimated percentage of housing units with significant lead-based paint hazards for each U.S. Census Bureau survey region and HUD region.

Table 1 – American Healthy Homes Survey II estimated regional percentage of housing units with significant lead-based paint hazards

| U.S. Census Bureau region | HUD region | Estimated percentage of housing units with significant lead-based paint hazards |
|---|---|---|
| Northeast | I, II, and III (PA only) | 44.2 percent |
| Midwest | V, VII, VIII (ND and SD only) | 35.6 percent |
| West | VIII (excluding ND and SD), IX, and X | 23.7 percent |
| South | III (excluding PA), IV, and VI | 21.9 percent |

### Indicator 2: Number and Percentage of Public Housing Buildings in the Region Constructed Before 1978[31]

HUD did not have data on construction dates for 46.3 percent of the PHA housing buildings as of November 2021. See table 2 for a summary of all housing buildings constructed before 1978, based on best available data, listed in order of total housing buildings that meet the criteria.

[30] The reasons given for why only 30 percent of the sample homes completed the survey were refusal (33 percent), inability to contact a resident (23 percent), and ineligibility (7 percent).

[31] * The indicator description was corrected to differentiate between housing units and buildings.

Table 2 – Number and percentage of public housing buildings constructed before 1978 (highest to lowest)

| HUD region | Total public housing buildings constructed before 1978 (if available) | Percentage of region's public housing buildings constructed before 1978 |
|---|---|---|
| Region IV | 41,236 | 59.3 percent |
| Region VI | 18,363 | 51.4 percent |
| Region V | 12,412 | 42.9 percent |
| Region III | 11,386 | 58.5 percent |
| Region VII | 6,168 | 57.5 percent |
| Region II | 4,513 | 54.8 percent |
| Region I | 4,095 | 62.5 percent |
| Region IX | 4,059 | 35.7 percent |
| Region VIII | 2,258 | 54.4 percent |
| Region X | 1,377 | 35.9 percent |
| **Total** | **105,867** | **53.3 percent**[32] |

### Indicator 3: Number of Recorded Children With EBLLs Living in Public Housing

HUD's PIH developed an EBLL tracker to collect and monitor PHA-reported instances of children with EBLLs living in public housing or voucher homes.[33] If a child living in public housing is diagnosed with an EBLL and PHA staff becomes aware of this diagnosis, the PHA must notify both the PIH field office and OLHCHH.[34] PIH then performs monitoring to ensure that the PHA is compliant with its responsibilities according to the Lead Safe Housing Rule. Specifically, a PIH field office ensures that the PHA notifies other residents of an EBLL diagnosis and investigates whether there is lead-based paint in the child's home. If lead-based paint is identified, the PHA must follow HUD guidelines for controlling such hazards, to include abatement—fully eliminating the hazard—or taking "interim control" steps to mitigate the hazard.[35]

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32 The total percentage of public housing buildings across all HUD regions

33 Before implementing the EBLL tracker, the EBLL tracking process required PIH to sort through files maintained by the PHAs to ensure their compliance with the lead regulations and that the PHAs mitigated hazards in affected housing units. Information collected during this time was not entered into the tracker and could not be reviewed for this report.

34 The Lead Safe Housing Rule requires PHAs to exchange address data and any known EBLLs with health departments quarterly.

35 HUD's Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Public Housing was issued in 2012 by OLHCHH. "Interim control" is defined in the Residential Lead-Based Paint Hazard Reduction Act of 1992 as "a set of measures designed to reduce temporarily human exposure or likely exposure to lead-based

As of April 13, 2022,[36] the EBLL tracker showed that approximately 94 percent of reported children living in public housing who were diagnosed with an EBLL resulting from a confirmed lead-based paint hazard found during an environmental investigation were in either New York or Pennsylvania. The remaining States each had two or fewer reported children with a diagnosed EBLL from a confirmed lead-based paint hazard. We did not include the results for those regions in table 3. As we continue our evaluation, we will explore the quality of the data collected and maintained by PIH, including in the EBLL tracker.

Table 3 – Number and percentage of recorded children with EBLLs in the EBLL tracker from New York and Pennsylvania[37]

| HUD region | State | Total number of recorded children in the EBLL tracker | Percentage of total number of recorded children in the EBLL tracker |
|---|---|---|---|
| Region II | New York | 171 | 77.4 percent |
| Region III | Pennsylvania | 37 | 16.7 percent |

## Indicator 4: Number of Substandard or Troubled PHAS Scores

REAC uses PHAS to review and assess a PHA's performance in managing its low-rent public housing programs, as well as to support a PHA in its efforts to provide housing that is decent, safe, sanitary, and in good repair.[38] HUD's physical inspection protocol—the UPCS—does not include specific protocols to inspect for lead hazards. However, for properties built before 1978, the REAC inspectors' review includes tenant files for whether a lead-based paint disclosure form exists and, if the property has been inspected for lead, whether a copy of the inspection report is in the files. In addition, the inspections capture deficiencies related to observable peeling paint or other damaged exterior or interior surfaces in buildings, which are the most common sources of lead-based paint hazards.

REAC completes reviews of public housing based on the size and previous performance of the specific PHA being reviewed.[39] REAC designates a PHA as "substandard" if it achieves a total PHAS score of at least 60 but achieves a score of less than 60 in one or more of the following categories: (1) physical, (2) financial, or (3) management.[40] REAC designates a PHA as "troubled" if it achieves an overall PHAS score

paint hazards, including specialized cleaning, repairs, maintenance, painting, temporary containment, ongoing monitoring of lead-based paint hazards or potential hazards, and the establishment and operation of management and resident education programs."

36 PHA and PIH program staffs continuously update the EBLL tracker in real time. As a result, the data described were limited and only accurate as of April 13, 2022, the date on which we accessed the system.

37 Table 3 reflects children living in public housing with EBLLs that were a result of a confirmed lead-based paint hazard in the home.

38 HUD suspended REAC physical inspections from late March 2020 to June 2021 due to the COVID-19 pandemic.

39 For example, REAC reviews small PHAs (250 units or fewer) every 1, 2, or 3 years depending on their PHAS scores and designation. REAC reviews "high performer" PHAs every 3 years, "standard" and "substandard" PHAs every other year, and "troubled" PHAs annually.

40 REAC's physical condition assessment is based on an independent physical inspection of a PHA's developments performed by contract inspectors and conducted using HUD's UPCS under 24 CFR part 5, subpart G.

of less than 60 or if it receives a score of less than 50 for the Capital Fund program category.[41] REAC uses the physical inspection scores of individual developments and properties to calculate a single physical inspection score for the PHA, which accounts for 40 percent of the PHA's overall PHAS score. As a result, a substandard or troubled PHAS score may indicate the presence of poor physical conditions—including lead-based paint hazards—at a PHA's properties. See table 4 for the total number of PHAs with substandard or troubled PHAS scores in each HUD region, listed in order of the number of substandard or troubled PHAS scores.

Table 4 – Number and percentage of substandard or troubled PHAS scores (highest to lowest)

| HUD region | Number of substandard or troubled PHAS scores | Percentage of region's PHAs that received a substandard or troubled PHAS score |
|---|---|---|
| Region VI | 97 | 11.8 percent |
| Region IV | 74 | 8.1 percent |
| Region V | 59 | 9.5 percent |
| Region VII | 37 | 9.4 percent |
| Region II | 20 | 7.5 percent |
| Region III | 19 | 9.7 percent |
| Region VIII | 18 | 11.0 percent |
| Region I | 9 | 3.5 percent |
| Region IX | 5 | 3.8 percent |
| Region X | 2 | 2.9 percent |
| **Total** | **340** | **8.8 percent[42]** |

## Indicator 5: Number of PHAs in the Lead-Based Paint Response Tracker

REAC inspectors collect data on whether PHAs with buildings and developments built before 1978 have a lead-based paint inspection report and lead-based paint disclosure forms on file.[43] OFO collects and maintains those data in the Lead-Based Paint Response tracker to monitor PHAs' compliance with the Lead Safe Housing Rule. OFO established the tracker in 2016 to improve its monitoring and oversight of lead-based paint hazards. The tracker shows active cases that involve PHAs with developments that did not have the required lead-related documentation on file during REAC inspections.[44] HUD regions with

41 The Capital Fund program indicator examines how long it takes a PHA to obligate funds in relation to statutory deadlines for all Capital Fund program grants.

42 The total percentage of PHAs that received substandard or troubled PHAS scores across all HUD regions

43 exclusively for the elderly or persons with disabilities, and any dwelling in which the living area is not separated from the sleeping area.

44 Only PIH OFO program staff located in headquarters may resolve an open case after reviewing documentation that the OFO field office staff upload to the tracker. Generally, the tracker displays open and active cases, but the OFO field office staff is able to search for and view resolved cases.

more PHAs in the Lead-Based Paint Response tracker could increase the risk of potential lead-based paint hazards going undetected by REAC and PIH. As of April 13, 2022,[45] 125 PHAs with missing lead-related documentation were listed in the Lead-Based Paint Response tracker. See table 5 for the number of PHAs in the Lead-Based Paint Response tracker by HUD region, listed in order of the total number of PHAs in the tracker.

Table 5 – Number and percentage of PHAs in the Lead-Based Paint Response tracker[46] (highest to lowest)

| HUD region | Total number of PHAs in the Lead-Based Paint Response tracker | Percentage of region's PHAs in the Lead-Based Paint Response tracker |
|---|---|---|
| Region V | 29 | 4.7 percent |
| Region VI | 28 | 3.4 percent |
| Region IV | 28 | 3.0 percent |
| Region II | 24 | 9.0 percent |
| Region VIII | 6 | 3.7 percent |
| Region VII | 4 | 1.0 percent |
| Region I | 3 | 1.1 percent |
| Region III | 3 | 1.5 percent |
| Region IX | 0 | 0 percent |
| Region X | 0 | 0 percent |
| **Total** | **125** | **3.2 percent[47]** |

## Indicator 6: Amount of Funding Received From HUD's LBPCF or Housing-Related Hazards Capital Fund Grant Programs

HUD created its LBPCF program in 1998. It is a competitive program in which PHAs can get funding for lead-based paint testing and hazard control. The intent of the program is to ensure that lead hazard reduction applicants serve community residents with the highest lead needs. The LBPCF program is part of a larger Public Housing Capital Fund, which provides funds annually to PHAs across the United States for modernization, development, capital and management activities, and other eligible activities.[48] HUD awards LBPCF grants to PHAs that both (1) apply for the grant and (2) are eligible for the grant.[49] PHAs are required to identify one or more high-need target areas in their jurisdictions for proposed lead hazard

45 PHA and PIH program staffs continuously update the Lead-Based Paint Response tracker in real time. As a result, the data described were only accurate as April 13, 2022, the date on which we accessed the system.

46 The data collected to calculate the percentage of PHAs appearing on the Lead-Based Paint Response tracker were accurate as of April 19, 2021. The tracker data described were accurate as of April 13, 2022, the date on which we accessed the system.

47 The total percentage of PHAs on the Lead-Based Paint Response tracker across all HUD regions

48 See 24 CFR part 905.

49 We did not consider those PHAs that applied for a grant but did not receive one.

evaluation and control activities.[50] However, the available amount of funding for these activities is not enough to ensure that all PHAs are able to address all lead-based paint hazards.

HUD awarded four rounds of funding for public housing lead-related grant programs during FYs 2017-2021, three for the LBPCF grant program and one for the Housing-Related Hazards Capital Fund grant program.[51] The requirements of each grant varied and were listed in each notice of funding availability for FYs 2017-2020 as well as the notice of funding opportunity for FY 2021. HUD reviewed all of the applications, determined whether PHAs met eligibility and threshold requirements, and scored the applications based on these factors, including need and past performance.[52] HUD awarded funding to the PHAs with the highest scores. See table 6 for the total amount of lead-related grant funding awarded to each HUD region from FYs 2017 to 2021, listed in order of grant funding awarded.

**Table 6 – FYs 2017-2021 LBPCF and Housing-Related Hazards Capital Fund grant program funding (highest to lowest)**

| HUD region | Total funding | Percentage of total funding |
|---|---|---|
| Region IV | $25,359,984 | 25.6 percent |
| Region VI | 15,955,255 | 16.1 percent |
| Region II | 14,872,600 | 15.0 percent |
| Region V | 12,041,902 | 12.2 percent |
| Region I | 9,684,110 | 9.8 percent |
| Region III | 9,364,211 | 9.5 percent |
| Region IX | 7,814,912 | 7.9 percent |
| Region VII | 2,179,960 | 2.2 percent |
| Region VIII | 1,000,000 | 1.0 percent |
| Region X | 718,256 | 0.7 percent |
| **Total** | **$98,991,190** | **100 percent** |

[50] Target areas are areas in which low-income families with children make up a significantly higher proportion of the population when compared to the State average and instances of EBLLs reported are significantly higher than the State average.

[51] The LBPCF grant program provides competitive grants to PHAs to evaluate and reduce lead-based paint hazards in public housing by carrying out the activities of risk assessment, abatement, and interim controls in public housing constructed before 1978. The Housing-Related Hazards Capital Fund grant program helps PHAs identify and eliminate housing-related hazards in public housing, such as mold, carbon monoxide, pest infestation, radon, fire hazards, and other housing hazards, including lead hazards.

[52] HUD evaluates need based on the age of properties the PHAs propose for LBPCF funding as well as the occupancy of families with at least one child under 6 years of age in those properties.

### Indicator 7: Amount of Funding Received From CDC Childhood Lead Poisoning Prevention Programs

CDC awards grants to State and local programs for childhood lead poisoning prevention activities. The grants support CDC's program goals to screen for and prevent childhood lead poisoning and eliminate lead hazards. CDC considers the following lead exposure risk factors when making funding decisions: (1) the population of children under 6 years of age, (2) the percentage of housing built before 1978, and (3) the percentage of the population living below the poverty level. Among the expected outcomes for grant funding recipients are (1) increasing the ability to target interventions (for example, education and outreach) to high-risk geographic areas and populations and (2) increasing the identification of children exposed to lead. Similar to the HUD lead grant programs, the State and local programs receiving CDC lead program funding had a demonstrated need for the funding to eliminate, prevent, or identify exposure to or the risk of lead hazards in their geographic areas.

The latest information available on CDC State grant funding was from FY 2019. See table 7 for the total amount of funding awarded by HUD region, listed in order of CDC grant funding provided.

**Table 7 – CDC funding for childhood lead poisoning prevention programs (highest to lowest)**

| HUD region | Total funding |
|---|---|
| Region IV | $3,504,698 |
| Region V | 3,402,330 |
| Region III | 2,705,836 |
| Region I | 2,612,992 |
| Region VI | 2,609,210 |
| Region VII | 1,760,545 |
| Region IX | 1,541,583 |
| Region X | 1,483,879 |
| Region II | 1,294,472 |
| Region VIII | 555,925 |
| **Total** | **21,471,470** |

### Indicator 8: Number and Percentage of Confirmed EBLLs in Tested Children Greater Than 5 µg/dL, as Reported by CDC for 2018[53, 54]

CDC collects and maintains State and local health department data on reported EBLLs in children under the age of 6. CDC requires the State and local childhood lead poisoning prevention programs it financially supports to report childhood blood lead data. CDC applies nationally consistent standard definitions and

[53] *A correction was made to the year.

[54] These data are based on all children who receive a blood lead test, not exclusive to children residing in public housing. Additionally, not all children residing in public housing receive blood lead tests.

classifications for blood lead surveillance, as well as rigorous error-checking and validation algorithms to ensure accuracy.

State and local health departments that do not receive such funding from CDC are not required to report EBLL data. In 2018,[55] eight States' health departments did not receive CDC funding for lead poisoning prevention programs and, therefore, chose not to report EBLL data to CDC.[56] One State, California, made childhood EBLL data publicly available on the California Department of Public Health's website. The other States did not make their childhood EBLL data publicly available. See table 8 for a summary of reported EBLLs by region, listed in order of percentage of confirmed EBLLs in tested children.

Table 8 – 2018 confirmed EBLLs in tested children greater than 5 µg/dL by HUD region (highest confirmed percentage to lowest)

| HUD region | Confirmed number of EBLLs in tested children | Confirmed percentage of region's EBLLs in tested children |
|---|---|---|
| Region VII | 6,985 | 3.8 percent |
| Region V[57] | 20,668 | 3.7 percent |
| Region III[58] | 13,740 | 3.7 percent |
| Region I | 9,708 | 2.9 percent |
| Region II | 18,449 | 2.8 percent |
| Region X[59] | 909 | 2.1 percent |
| Region VI[60] | 6,621 | 1.7 percent |
| Region IX | 7,856 | 1.4 percent |
| Region IV[61] | 8,900 | 1.3 percent |
| Region VIII[62] | insufficient data | insufficient data |
| **Total** | **94,285** | **2.5 percent[63]** |

55 The most recently available CDC blood lead level surveillance data were for 2018.

56 EBLL data for 2018 were not available for two States that received funding—Kentucky and Delaware.

57 Missing data for Michigan

58 Missing data for Delaware [*This footnote was added as a correction.]

59 Missing data for Idaho

60 Missing data for Arkansas

61 Missing data for Kentucky

62 We were unable to report on the confirmed EBLLs in tested children greater than 5 µg/dL due to insufficient data. Colorado is the only State in Region VIII that reported blood lead surveillance data to CDC. The total number of confirmed EBLLs above 5 µg/dL in Colorado was 449.

63 The total percentage of confirmed EBLLs in tested children across all HUD regions.

### Indicator 9: Lead Exposure Risk Index

In 2016, the Washington State Department of Health and Vox Media developed a lead exposure risk map and risk index to estimate which U.S. census tracts, counties, and States had the highest risk of lead exposure. Their mission was to determine how to focus scarce public health dollars on the kids most at risk of being poisoned by lead. The risk index scale is 1 through 10, with 10 being the highest risk of lead exposure. The risk map and index are based on the U.S. Census Bureau's American Community Survey data related to the age of the local houses and the percentage of the population living in poverty.[64] According to Vox Media, a high-risk score does not definitively mean that there are lead hazards but shows that, given what is known about lead exposure, there is a greater risk of exposure in those areas. For the purposes of this report, we replicated the methodology used to identify high-risk census tracts. Specifically, we downloaded and analyzed the risk exposure data to identify geographic areas that are at greater risk of lead hazard exposure. We identified census tracts with a risk index of 1 to 3 as low risk, a risk index of 4 to 6 as moderate risk, and a risk index of 7 to 10 as high risk. See table 9 for the HUD regions with the highest number of census tracts with a risk index of 7 and above.

Table 9 – High-risk census tracks by HUD region

| HUD region | Number of high-risk census tracks (risk index ≥ 7) | Percentage of region's high-risk census tracks (risk index ≥ 7) |
|---|---|---|
| Region V | 6417 | 49.3 percent |
| Region II | 4274 | 62.6 percent |
| Region IX | 3700 | 35.3 percent |
| Region IV | 3651 | 26.5 percent |
| Region III | 3105 | 42.4 percent |
| Region VI | 2794 | 32.6 percent |
| Region VII | 1773 | 50.7 percent |
| Region I | 1660 | 49.5 percent |
| Region VIII | 776 | 29.3 percent |
| Region X | 746 | 27.3 percent |
| **Total** | **28,896** | **40.0 percent[65]** |

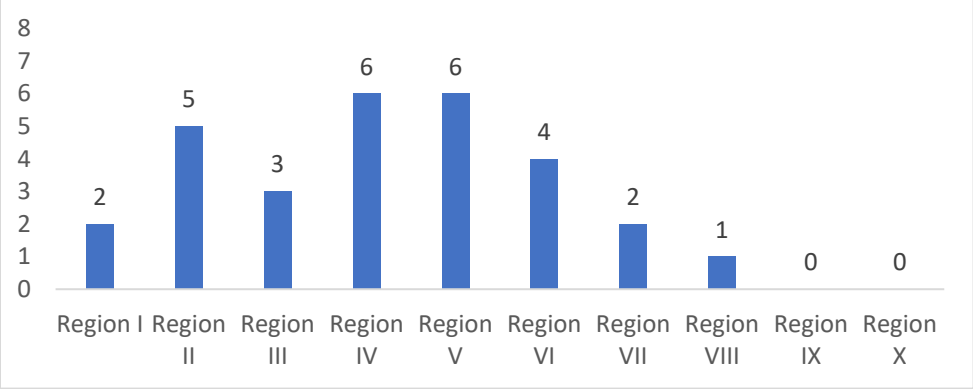
[64] The American Community Survey is an ongoing yearly survey that provides information related to a community population's jobs and occupations, educational attainment, veteran status, whether people own or rent their homes, and other topics. The information collected through the survey helps local officials, community leaders, and businesses understand the changes taking place in their communities.

[65] The total percentage of high-risk census tracts across HUD regions.

## INDICATORS IDENTIFIED HUD REGIONS AND STATES WITH THE MOST POTENTIAL RISK OF HAVING PHAS WITH LEAD-BASED PAINT HAZARDS

We analyzed the risk indicators of lead-based paint hazards in each of HUD's 10 regions and then determined which 3 regions had the highest risk measure (count or percentage) for each indicator. We then determined the regions with the most potential risk by totaling how often each region had one of the three highest risk measures for each of the nine indicators. In the previous section, we reported both totals and percentages for the indicators' units of measurement when applicable. However, for the purposes of this report, our analysis focused on the totals for an indicator's unit of measurement across the HUD regions.[66] Based on this analysis, we concluded that HUD Regions II, III, IV, V, and VI had the most potential risk of having PHAs with lead-based paint hazards.[67] See chart 1 for the number of times we identified each HUD region as having one of the three highest measures for each indicator of lead-based paint hazards.

Chart 1 – Number of times HUD regions measured in "top three" of an indicator of lead-based paint hazards




### States Throughout HUD Regions Have Indicators of Lead-Based Paint Hazards

We used a similar process to the one described above to identify the State within each region with the most potential risk indicators for PHAs with lead-based paint hazards.[68] To identify the State within each region, we totaled how often a State had the highest or second highest measure in that region for each risk indicator of PHAs with lead-based paint hazards. We considered those States as having the most potential risk of having PHAs with lead-based paint hazards in their respective HUD regions. Within Regions II, III, IV, V, and VI, the States we identified with the most potential risk of having PHAs with lead-

[66] Although we did not focus our analysis on percentages for the majority of the indicators, they provide another useful means of assessing the risk of lead-based paint hazards across the HUD regions.

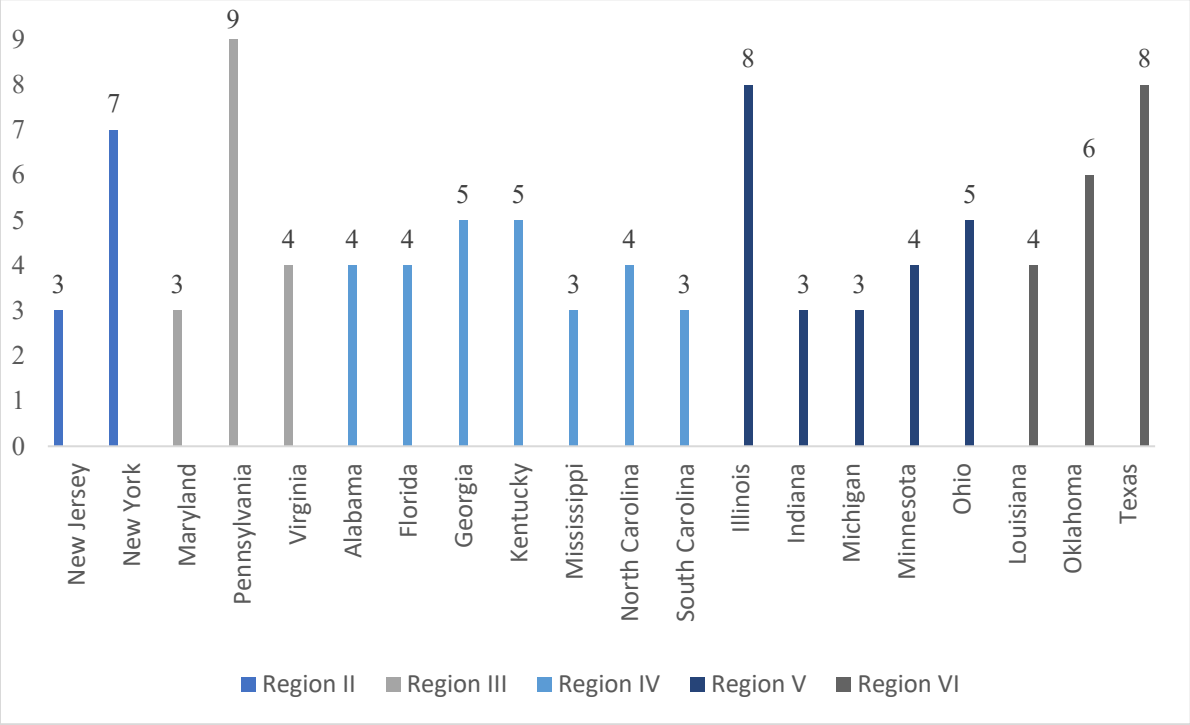
[67] Based on the alternative analysis focusing on percentages, the HUD regions with the most potential risk of having PHAs with lead-based paint hazards were Regions II, III, IV, and V.

[68] Our results do not mean that there are not PHAs at risk of having lead-based paint hazards in HUD regions not represented in our results.

based paint hazards were New York (Region II), Pennsylvania (Region III), Georgia (Region IV), Kentucky (Region IV),[69] Illinois (Region V), and Texas (Region VI).

While we identified six States as having the most potential risk of having PHAs with lead-based paint hazards, our methodology showed that there was a risk of lead-based paint hazards throughout our identified regions. Other States in these regions, while not found to have the most potential risk in their respective regions, may still have had noteworthy risk using our indicators. For example, we observed that two States—Ohio (Region V) and Oklahoma (Region VI)—measured as the highest or second highest State in their respective regions for more than 50 percent of the risk indicators but still did not total the highest for all of the indicators in their regions. Further, six other States across the five regions measured as the highest or second highest for at least four (44.4 percent) of the risk indicators. See chart 2 for the number of indicators of lead-based paint hazards for each State and territory within the identified regions.

Chart 2 – Number of indicators of potential risk of PHAs with lead-based paint hazards in States and territories within Regions II, III, IV, V, and VI[70]




[69] We identified Georgia and Kentucky as having the same potential risk of having PHAs with lead-based paint hazards. See chart 2.

[70] The following States, district, and territories had two indicators or fewer and were not included in chart 2: Delaware (Region III), Washington DC (Region III), West Virginia (Region III), Puerto Rico (Region IV), Tennessee (Region IV), U.S. Virgin Islands (Region IV), Wisconsin (Region V), Arkansas (Region VI), and New Mexico (Region VI).

# Conclusion

According to CDC, lead-based paint and lead-contaminated dust are some of the most widespread and hazardous sources of lead exposure for young children in the United States. When lead-based paint peels and cracks, it results in lead-contaminated paint chips and dust. Children can be poisoned if they chew on surfaces coated with lead-based paint, eat flaking paint chips, or eat or breathe in lead dust. CDC has reported that there is no safe blood lead level in people and there is no cure for lead poisoning, which is why it is important to prevent exposure to lead, especially among young children. There are approximately 126,380 public housing buildings and 696,260 units that were built before 1978, the year the Federal Government banned lead-based paint.[71]

HUD OIG and GAO have made several recommendations to HUD for improving the oversight and monitoring of lead-based paint hazards in publicly assisted housing. In addition, HUD OIG has identified eliminating hazards in HUD-assisted housing as a top management challenge for HUD. In response, REAC was establishing ESS to improve its risk assessment and inspection capabilities for health and safety hazards, including lead hazards. As part of the process of establishing ESS, REAC developed a prototype risk ranking approach that has five risk indicators for lead. This report identifies risk indicators for potential lead-based paint hazards in addition to those that HUD has considered, which could prove useful as it continues to identify risk factors and develop its risk ranking approach.

Although all HUD regions are at risk of having PHAs with potential lead exposure, our analysis identified five regions that, based on the identified indicators, are more at risk of having PHAs with potential lead-based paint hazards. Within those five regions, we identified six States (Region IV had two States with the same number of indicators based on our analysis) with the most potential risk of having PHAs with lead-based paint hazards in each region—New York, Pennsylvania, Georgia, Kentucky, Illinois, and Texas. In addition, our analysis identified two States (Ohio and Oklahoma) that, while not the most at-risk States in their respective regions, also have a higher potential risk of having PHAs with lead-based paint hazards. As HUD continues implementing ESS, it should continuously assess its risk ranking approach and risk indicators to ensure that ESS achieves its goals and objectives to quantify the risk of environmental hazards, facilitate the allocation of resources, and drive effective hazard management strategies.

The next portion of the evaluation will focus on those PHAs with known cases of EBLLs and whether HUD followed its established processes. We will also focus on the accuracy and completeness of lead-related data collected by HUD.

[71] This number was based on developments' date of full availability. This is the date the development is ready to be occupied. It may differ from construction date. [*This footnote was updated as a correction.]

# Appendixes

## APPENDIX A - AGENCY COMMENTS AND OIG RESPONSE

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

OFFICE OF LEAD HAZARD CONTROL
AND HEALTHY HOMES
OFFICE OF PUBLIC AND INDIAN
HOUSING

September 19, 2022

MEMORANDUM FOR: Brian T. Pattison, Assistant Inspector General for Evaluation

FROM: Matthew Ammon, Director, Office of Lead Hazard Control and Healthy Homes
MATTHEW AMMON

Dominique Blom, General Deputy Assistant Secretary for Public and Indian Housing

SUBJECT: Review of September 8, 2022, Revised Draft Report, Risk Indicators of Lead-Based Paint Hazards in Public Housing Agencies

The Office of Lead Hazard Control and Healthy Homes and the Office of Public and Indian Housing thank you for the opportunity to review and comment on the draft report.

Our initial review found that two of the draft's nine asserted "indicators of potential risk for lead-based paint hazards" are actual measures of risk (in this case, percentages). After our offices met with your staff regarding the risk indicators in the first draft, they changed the draft to reflect the appropriate percentages in several of the report's tables that had just quantities. They also briefly stated that using these percentages could provide another means by which to assess risk for lead-based paint hazards across HUD regions.

In our review of the revised draft report, we found that only a few of the criteria were updated, leaving a discrepancy of seven other items. These discrepancies imply that these quantities are still risk indicators. Therefore, we recommend that you revise the draft report to reflect that the proper criteria are applied consistently throughout the report. This will allow our Offices to rely on the report for making managerial decisions. Please find attached our technical comments.

If you have questions on this review, please contact Warren Friedman, PhD, FAIHA, at 202-423-3730 cell.

# Agency Comments and Office of Inspector General Response

While we did not issue any recommendations, we requested and received comments from the Office of Lead Hazard Control and Healthy Homes (OLHCHH) and the Office of Public and Indian Housing (PIH) in response to our draft report. In those comments, the U.S. Department of Housing and Urban Development (HUD) questioned whether the information we present met the definition of risk indicators.

We provide HUD with data points that indicate risk. As described in the report, the new Environmental Shared Services office (ESS) identified five indicators for its lead-based paint risk ranking model. Four of ESS's indicators overlap with the data points we identified that may indicate risk for lead-based paint hazards in public housing agencies. The other five data points we offer serve as suggestions that HUD may consider. We encourage HUD to continuously assess its risk ranking approach and risk indicators to ensure that ESS achieves its goals and objectives to quantify the risk of environmental hazards, facilitate the allocation of resources, and drive effective hazard management strategies.

Prior to finalizing the report, we discussed the nine data points identified in our report with OLHCHH and PIH. We reinforced that our methodology is not prescriptive; rather, it presents one way of assessing risk. The report explicitly states that using the totals of an indicator's unit of measurement was not the only way to identify potential risk for lead-based paint hazards. Percentages can also provide another useful means of assessing the risk of lead-based paint hazards across the HUD regions. To highlight and support that statement, we included region-based percentages in addition to the quantities for additional perspective.

## APPENDIX B - ABBREVIATIONS

| Abbreviation | Definition |
|---|---|
| CDC | Centers for Disease Control and Prevention |
| CFR | Code of Federal Regulations |
| EBLL | elevated blood lead levels |
| ESS | Environmental Shared Services office |
| GAO | U.S. Government Accountability Office |
| HUD | U.S. Department of Housing and Urban Development |
| IMS-PIC | Inventory Management System-Public Housing Information Center |
| LBPCF | Lead-Based Paint Capital Fund |
| OFO | Office of Field Operations |
| OIG | Office of Inspector General |
| OLHCHH | Office of Lead Hazard Control and Healthy Homes |
| PHA | public housing agencies |
| PHAS | Public Housing Assessment System |
| PIH | Office of Public and Indian Housing |
| REAC | Real Estate Assessment Center |
| UPCS | Uniform Physical Condition Standards |

## APPENDIX C - ACKNOWLEDGEMENTS

This report was prepared under the direction of Brian T. Pattison, Assistant Inspector General for Evaluation; Christopher Backley, Director of the Program Evaluations Division; and Kaitlyn Large, Assistant Director. The Office of Evaluation staff members who contributed are recognized below.

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