Lead Dust Testing via Maine Families Home Visiting Program
Pilot Test Results

A Report to the
Joint Standing Committee on Health and Human Services

Submitted by:
Maine Center for Disease Control and Prevention
Maine Department of Health and Human Services
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Introduction
This report has been prepared by request for the Joint Standing Committee on Health and Human Services. The report is intended to provide the Committee with information about the Department of Health and Human Services' (DHHS) pilot lead dust testing initiative through the Department-funded Maine Families Home Visiting Program, in light of the Committee's consideration of LD 691, "An Act to Prevent Childhood Lead Poisoning in Children."

This report includes the following sections:

A. Summary
B. Background About Lead Dust and the Maine CDC's Lead Dust Testing Initiatives
C. Pilot Implementation
D. Pilot Results and Discussion
E. Conclusions and Path Forward
F. Appended Figures

In specific, this report addresses how the pilot was implemented, presents the results of the pilot related to the feasibility of providing lead dust tests through the Maine DHHS-funded Maine Families Home Visiting Program, and discusses the decision to continue lead dust testing provided to families through the Maine Families Home Visiting Program.

A. Summary
From December 2016 through November 2017, the Maine Center for Disease Control and Prevention (CDC) partnered with the Maine DHHS-funded Maine Families Home Visiting Program on a statewide pilot to assess the feasibility of providing free, facilitated lead dust tests to families who have children at risk for childhood lead poisoning. This pilot grew out of a similar effort focused on families who live in areas at high-risk for childhood lead poisoning which Maine CDC funded through the Lead Poisoning Prevention Fund (22 MRS § 1322-E) from 2012 through 2016.

About Home Lead Dust Testing
Facilitated lead dust testing involves using trained in-home service providers to help families complete a do-it-yourself test to find out if there is lead dust in the home. Lead dust is believed to be the most common cause of lead poisoning in Maine, and exposure to lead dust typically occurs as a child becomes mobile and continues through age 3 years. The Maine CDC also offers families lead dust test kits without facilitation through an annual statewide targeted mailing to households with young children, through its website, and through brochures distributed by healthcare providers and community organizations.

The purpose of Maine CDC's home lead dust testing initiative is prevention; that is, home lead dust testing is a cost-efficient way for families to identify and address lead dust in the home *before* a child is poisoned. With a facilitated lead dust test, a trained service provider helps a family with the entire testing process, including: identifying whether or not the children are at risk, assisting the family in taking samples on floors and windowsills, and ensuring the test is submitted to the laboratory where the samples are analyzed to determine the amount of lead dust present.

Pilot Implementation
The Maine DHHS-funded Maine Families Home Visiting program provides pregnant women and infants with home-based services to promote child health and well-being, making it a good partner in Maine CDC's lead dust testing initiative. Maine Families Home Visiting Program agreed to pilot test facilitating home lead dust tests for families enrolled in the program to determine if it would be feasible to add this

service to those they already provide families (e.g., safe sleep education, injury prevention, breastfeeding support, etc.). The program received no additional funding for their participation, but Maine CDC provided training, ongoing support, and paid for the laboratory costs associated with lead dust tests.

The Maine CDC provided the home visiting program with 200 home lead dust test kits to distribute among the 12 local agencies that provide home visiting services in each of Maine's 16 counties. Over the course of the 12-month pilot period, home visitors facilitated 91 home lead dust tests with families participating in the home visiting program.

Results Summary, Conclusion and Path Forward

The pilot was evaluated to assess the feasibility of conducting home lead dust tests through Maine Families Home Visiting Program and how this home lead dust testing initiative compares to other Maine CDC home lead dust testing initiatives. The key findings from the evaluation are as follows, and are explored in greater detail in the body of this report.

- Most of the lead dust tests were done in areas at high-risk for childhood lead poisoning, and by agencies that had previously incorporated lead dust testing into their practice.
- Facilitated lead dust testing through home visitors finds homes with lead dust problems at a rate consistent with other Maine CDC lead dust testing initiatives.
- Facilitated lead dust testing through home visitors is as cost efficient as the Department's other lead dust testing initiatives as a means to identify lead dust hazards prior to a child becoming poisoned.
- The number of facilitated lead dust tests completed was lower than expected due to concurrent changes to home visiting program requirements, preventing some home visiting sites from being able to fully incorporate lead dust testing into their service delivery.

Based on the results of pilot test, the Maine CDC recommends continuing the partnership with the Maine Families Home Visiting Program to provide free, facilitated lead dust tests for families, and to apply the lessons learned to expand the pilot and its evaluation in order to assess its effectiveness at preventing lead exposures and encouraging blood lead testing for children at-risk for lead poisoning.

B. Background About Lead Dust and Maine CDC's Lead Dust Testing Initiatives

Ingested lead dust found in the home environment is believed to be the most common cause of childhood lead poisoning in Maine. The following are key points about lead dust and childhood lead poisoning.

- Lead dust is created when old lead paint breaks down through normal wear and tear, is disturbed during renovations and repairs, is poorly maintained or is damaged, even if the old lead paint is covered by newer layers of non-leaded paint.
- High lead dust levels are most often found in residential buildings built before 1950, more rarely in residences built between 1950 and 1978.
- Lead dust settles on surfaces such as floors and windowsills-places where young children crawl, play, put their toys, look outside, and set down bottles and pacifiers.
- Young children ingest lead dust when they put their hands, toys, bottles, pacifiers, etc., contaminated with lead dust in their mouths during normal hand-to-mouth behavior.
- Children between the ages of 1 and 3 years are most at risk for lead poisoning as this is the age range when children become mobile and begin exploring the world through hand-to-mouth behavior.

Through the Lead Poisoning Prevention Fund (22 MRS § 1322-E) the Maine CDC has been offering free, do-it-yourself home lead dust tests as a way for families to find out if there are unsafe levels of lead dust in the home environment *before* a child is poisoned. Once a family completes a home lead dust test, the Maine CDC's Childhood Lead Poisoning Prevention Unit communicates results to families and provides appropriate follow up, including teaching a family how to properly clean up lead dust and providing a free lead dust re-test to ensure that the cleaning was effective. For a small number of families who live in rental units, lead dust levels identified through home lead dust testing are so extremely high that the Maine CDC will provide a professional, comprehensive environmental lead investigation pursuant to conditions specified in the Lead Poisoning Control Act (22 MRSA Ch 252).

The Maine CDC offers free home lead dust testing to families in two ways:

1. **Annual Offer to all Parents of 1-Year-Old Children via a Targeted Mailing**
   Since 2009, the Maine CDC has annually mailed an offer to receive a free lead dust test to all households with children who were born in the prior calendar year (11,000 to 13,000 families per year). Families can request a free lead dust test through a postage-paid reply card or through an online form. The Maine CDC provides families with the test kit, instructions, and online how-to videos to help families perform the lead dust test. In addition to the targeted mailing, families with young children who live in older housing may request a free home lead dust test kit at any time through the online form, or through brochures distributed through partner organizations or at healthcare provider offices.

2. **Facilitated Lead Dust Testing**
   In 2012, the Maine CDC began what it calls “facilitated lead dust testing” specifically to help families who may have had trouble accessing (e.g., English language learners) or little interest in its targeted mailing lead dust testing offer. When a lead dust test is facilitated, a trained facilitator assists a family with doing a lead dust test, ensures the test is mailed to the laboratory for analysis, and may help a family understand the test results. Between 2012 and 2016, community-based organizations funded by the Maine CDC to conduct lead poisoning prevention activities provided facilitated lead dust testing to tenants of rental units in high-risk communities.

In 2016, based on the success of prior facilitated lead dust testing efforts in high-risk areas, the Maine CDC’s Childhood Lead Poisoning Prevention Unit and the Maine DHHS-funded Maine Families Home Visiting program began a collaboration to pilot facilitated lead dust testing *statewide*. The collaboration between the programs makes sense not only because the Maine Families Home Visiting program enrolls and provides services to families during the prenatal period and early months of a child’s life – both good times to identify and address lead dust before children are poisoned – but also because home visitors are trained to empower parents to take actions to improve the health and well-being of their children. In addition, some local home visiting agencies had been working with the community organizations funded by Maine CDC to conduct lead poisoning prevention to provide facilitated lead dust tests for families in high-risk areas and were enthusiastic about expanding this service statewide.

C. Pilot Implementation

The home visiting lead dust testing pilot was coordinated through the Maine CDC’s Childhood Lead Poisoning Prevention Unit and the Maine Families Home Visiting Statewide Coordinator. The following provide an overview of how the pilot was implemented.

- **Time Frame**
  - October 2016-November 2016: Training and distribution of test kits to local home visiting agencies
  - December 1, 2016 – November 30, 2017: Home visitors conducted lead dust tests
- **Training and Resources**
  - Home visitors were offered in-person training and provided with an online training and two-page protocol via a page on the Maine CDC's website.
  - The training provided information on common lead poisoning risk factors, the benefits of lead dust testing for families, how to facilitate a lead dust test, and how to support families who find elevated lead dust in the home.
  - In person trainings were conducted for home visitors serving Cumberland and Washington Counties.
- **Lead Dust Test Volume**
  - Budgeted: 200 lead dust tests were provided to the Maine Families Home Visiting Program to distribute to local home visiting agencies.
  - Completed: 91 tests were completed during the 12-month pilot.
- **Cost and Funding Source**
  - Budgeted: $10,200 in laboratory fees for lead dust analyses (200 tests @ $51/ea)
  - Expended: $4,641 in laboratory fees (91 tests @ $51/ea)
  - Laboratory fees paid for by the Lead Poisoning Prevention Fund (22 MRS § 1322-E)
  - Staff time to facilitate tests was provided in-kind by home visitors; no additional funding was provided to the Maine Families Home Visiting Program to support facilitated lead dust testing services.

D. Pilot Results and Discussion

The Department examined the implementation of the pilot and its effectiveness to determine whether or not to continue and expand lead dust testing through home visitors, and what adjustments should be made if the program is continued and expanded. Following is a summary of the results.

1. **Most of the lead dust tests were done in areas at high-risk for childhood lead poisoning, and by agencies that had previously incorporated lead dust testing into their practice.**
   Taking a close look at locations where lead dust testing was conducted shows that local home visiting agencies that had been a part of the Department's facilitated lead dust testing initiative in areas at high risk for childhood lead poisoning from 2012 to 2016 completed more tests than other sites.
   - 50 of the 91 tests (55%) were performed in Androscoggin and York counties, both counties where home visitors had prior experience with home lead dust testing in the high-risk areas of Lewiston/Auburn and Biddeford/Saco.
     - All the 25 tests conducted in Androscoggin County were conducted in the high-risk area of Lewiston/Auburn.
     - 11 of the 25 tests conducted in York County were conducted in the high-risk area of Biddeford/Saco.
   - 20 of the 91 tests (22%) were in Cumberland County, the county of Portland/Westbrook, another high-risk area for childhood lead poisoning. The home visiting agency serving Cumberland County requested and received an in-person training for all staff precisely because Portland/Westbrook is considered a high-risk area and the home visitors were

eager to provide lead dust testing for families they serve. The local agency had not previously incorporated lead dust testing into their practice.

- 18 of the 20 tests completed in Cumberland County were conducted in the high-risk area of Portland/Westbrook.

In contrast, a total of 21 of the 91 (23%) tests were completed in just nine of Maine's 13 other counties, with sites serving four counties completing no tests. Table 1 in the appended figures (see page 8) presents the number of tests completed in each county during the pilot period. It is also worth noting that just one test was conducted in Bangor and no tests were conducted in Augusta, both of which are considered high-risk areas for childhood lead poisoning, but neither of which had prior experience with facilitated lead dust testing.

2. **Facilitated lead dust testing through home visitors finds homes with lead dust problems consistent with the Department's other lead dust testing initiatives.**
   Out of the 91 lead dust tests completed during the pilot period, 22 (24%) of those tests found elevated levels of lead dust.[1] This yield is slightly lower than, but consistent with, that of the home lead dusts conducted through the Maine CDC's annual statewide targeted mailing (27%), and the prior facilitated lead dust testing in high-risk areas (27%).

   In addition, the home visiting facilitated lead dust testing pilot found that 7% of units tested had extremely high levels of lead dust,[2] which is slightly lower than, but overall consistent with, the annual statewide targeted mailing (9%) and prior high-risk area facilitated lead dust testing efforts (8%). (See Figure 1 in the appended figures.)

   One notable difference between lead dust tests conducted during the pilot and those conducted through the annual targeted mailing is that 80% of the tests completed during the pilot were done in rental units compared to just 40% of tests done through the targeted mailing. This higher rate of testing indicates that lead dust testing through home visitors may enable Maine CDC to provide home lead dust testing to a different subset of at-risk families than we have been able to through the statewide targeted mailing.

3. **Facilitated lead dust testing through home visitors is as cost efficient as the Department's other lead dust testing initiatives as a means to identify lead dust.**
   Another important factor the Department considered in its evaluation of the Home Visiting lead dust testing pilot, was how the costs of the initiative compared to those of home lead dust testing conducted through the Department's annual targeted mailing to parents of 1-year-olds. To compare the two initiatives, we calculate both the cost per unit tested and the cost per unit tested with elevated dust levels (i.e., how much it costs to find a home with elevated lead dust).

   By both measures, facilitated home lead dusting through home visitors is slightly more cost-effective than home lead dust testing conducted through the annual targeted mailing as described below and shown in Figure 2 of the appended figures (see page 9).

[1] For its home lead dust testing initiatives, the Department defines elevated dust levels as a lead concentration >=30 ug/ft^2 on a floor surface or >=225 ug/ft^2 on a windowsill.

[2] For its home lead dust tests, the Department has set 200 ug/ft^2 on a floor or 2000 ug/ft^2 on a windowsill as the concentration thresholds above which the Department will conduct a comprehensive, professional inspection for lead hazards, pursuant to conditions specified in the Lead Poisoning Control Act (22 MRSA Ch 252).

- The Department spent $51 per unit tested during the home visiting pilot, compared to $74 per unit tested through its 2017 annual targeted mailing.
- The Department spent $211 to find a unit with elevated lead dust during the home visiting pilot, compared to $280 through our annual targeted mailing.

4. **The number of facilitated lead dust tests completed was lower than expected due to concurrent changes to home visiting program requirements.**
   As designed, the Department intended to complete 200 facilitated lead dust tests during the 12-month pilot; however, 91 tests were completed during the pilot period. Feedback gathered from home visitors indicates that the overall lower than expected testing volume was largely due to two significant competing priorities: 1) the roll out of a new data collection and family record system for the Maine Families Home Visiting Program; and, 2) major changes to federal performance measures that each home visiting agency is required to collect. These competing priorities prevented most of the local home visiting agencies from fully incorporating facilitated lead dust testing into their service delivery, which makes sense especially considering that these agencies received no additional resources to provide this additional service.

   Local home visiting sites anecdotally reported that other barriers to completing tests during the pilot period included that only some families met risk criteria for lead poisoning (i.e., lived in old housing), and that some families that lived in rental housing refused the test over concerns that it would result in eviction or in other retaliation from the landlord.[3] Data were not collected during the pilot period to quantify the magnitude of this barrier, but Maine CDC received similar anecdotal reports during its prior facilitated lead dust testing initiative in high-risk areas. The anecdotal feedback not only merits efforts to improve data collection to better assess this barrier, it also underscores some of the challenges inherent to preventing lead poisoning as it is a health issue that is very often directly tied to poverty and housing quality. Indeed, some families may feel that they must choose between finding out if they have unsafe levels of lead dust in their home or risking a crisis or major disruption in their housing situation.[4]

E. Conclusions and Path Forward

Over the course of this pilot project, Maine CDC found that partnering with home visitors to conduct facilitated home lead dust tests is a feasible and cost-efficient way to identify lead dust hazards in homes relative to the agency's other lead dusting initiatives. Moreover, by actively and directly encouraging families with children at risk to test their homes and providing support to families to overcome barriers to completing a lead dust test, the initiative supplements the agency's statewide efforts to more broadly promote lead dust testing through its annual targeted mailing that will be expanded in 2018 to include households with 1- and 2-year-old children.

[3] Under the Lead Poisoning Control Act (22 MRSA Ch 252), a family with children may not be evicted due to the discovery of lead-based paint in a rental unit. However, if the tenant is in breach of their lease agreement, behind in rent payments, or does not have a lease, the landlord may have cause for eviction. Home visitors were trained to discuss the potential negative impact conducting a lead dust test may have so that families may make an informed decision about doing a lead dust test.

[4] If a family chooses not to do a lead dust test, home visitors are encouraged to discuss the importance of having children tested for lead in the blood at ages 1 and 2 years, and to provide the family with information on actions they can take to prevent lead poisoning, such as blocking the child's access to areas of chipping and peeling paint, washing hands frequently, and frequently wet cleaning surfaces where children play and eat.

Maine CDC recommends continuing the partnership with the Maine Families Home Visiting Program to provide free, facilitated lead dust tests to families, with a goal of doubling the number of lead dust tests completed in the next year. With the lessons learned during the pilot, Maine CDC recommends putting more emphasis on working with local home visiting agencies to fully incorporate lead dust testing into service delivery by scheduling in-person trainings to local agencies where very few tests were done, and scheduling those trainings so they are not in conflict with competing priorities or other programmatic changes. Maine CDC recommends that it work with local agencies to provide them with information about towns and areas with higher rates and counts of children with lead poisoning to increase interest and motivation to conduct lead dust testing. This could be accomplished during in person trainings, by adding the information to the existing online training and protocols for home visitors, and through a presentation during a regular monthly meeting of the local home visiting agency program managers.

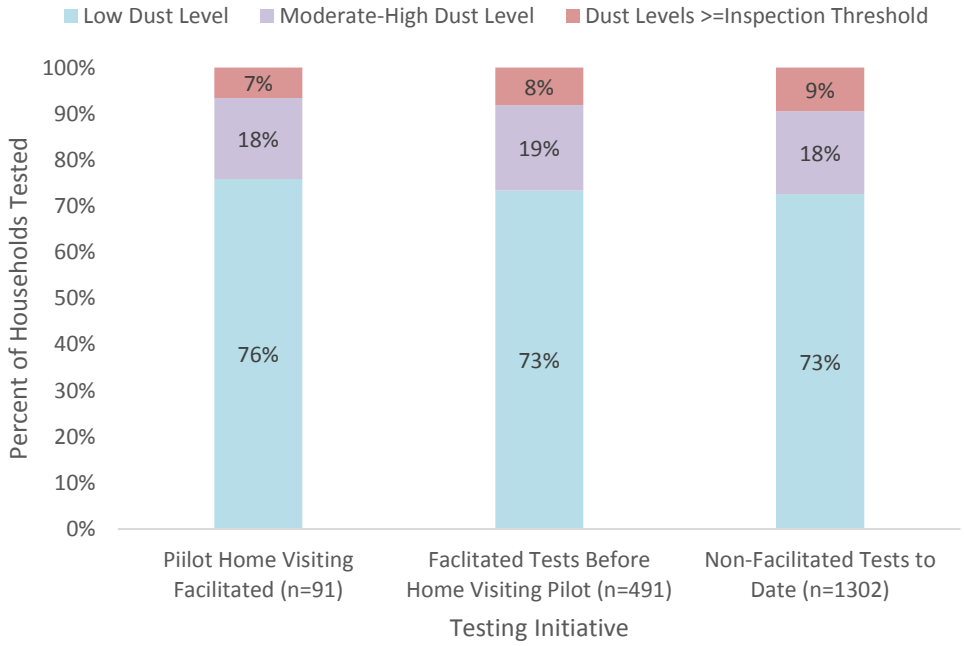
In addition, the Maine CDC recommends expanding its evaluation of the initiative beyond assessing feasibility to examine its effectiveness at preventing lead exposures and encouraging blood lead testing for children at-risk for lead poisoning. In specific, Maine CDC recommends that these expanded evaluation efforts include: 1) collecting data in order to assess the number of families at-risk who refuse the test; 2) follow-up lead dust testing for families who identified elevated levels of lead dust to assess adoption of long-term preventive behaviors to reduce lead dust levels in the home; and, 3) entering into an MOU with Maine Families Home Visiting to share individual level information in order to answer questions about blood lead testing and blood lead levels for children who live in households where a facilitated lead dust test was conducted.

F. Appended Figures

Table 1: Number of Facilitated Lead Dust Tests Completed by Home Visitors, by County, during the pilot period.

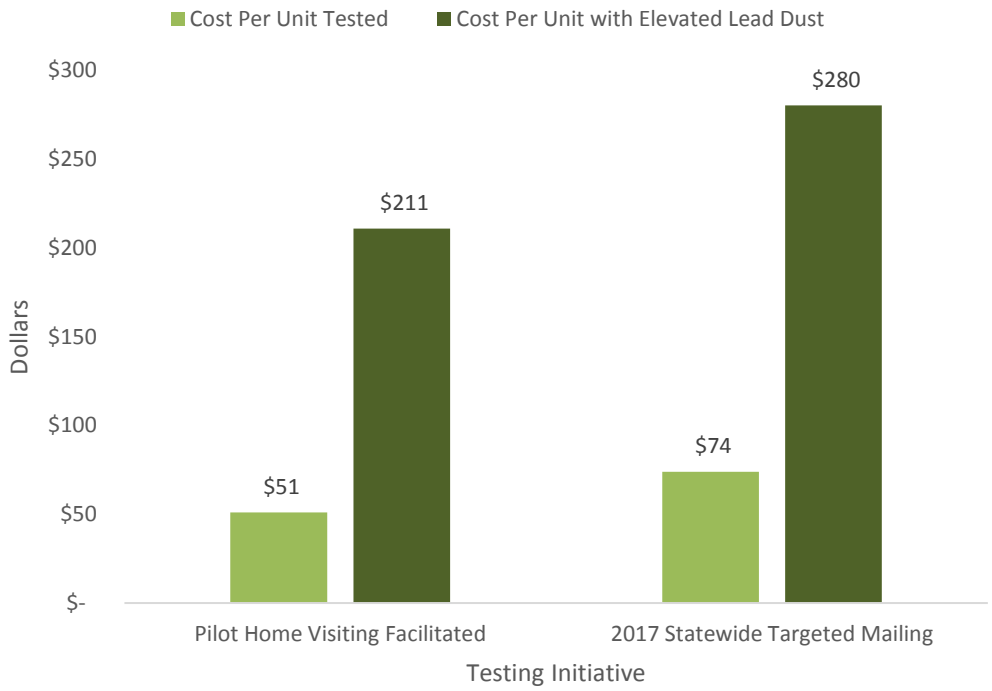
County	Number of Tests Completed
Androscoggin	25
York	25
Cumberland	20
Kennebec	7
Aroostook	4
Penobscot	3
Sagadahoc	2
Hancock	1
Oxford	1
Somerset	1
Waldo	1
Washington	1
Franklin	0
Knox	0
Lincoln	0
Piscataquis	0

Figure 1: This figure shows how lead dust levels found in homes tested is consistent across three of the Department's home lead dust initiatives: facilitated tests done during the pilot, facilitated tests done prior to the pilot in high-risk areas (2012-2016), and for non-facilitated home lead dust tests done to date (2009-2017).



Lead dust levels: Low (floors are <30 ug/ft^2 and windowsills are <225 ug/ft^2); Moderate-High (at least one floor is 30 ug/ft^{2}to <200 ug/ft^2 or a windowsill is 225 ug/ft2 to <2000 ug/ft^2); Inspection Threshold (at least one floor is >=200 ug/ft^2 or a windowsill is >=2000 ug/ft^2).

Figure 3: This figure shows how per unit the home visiting lead dust testing pilot was more cost efficient than home lead dust tests completed through the Department's annual statewide targeted mailing.



Note: Costs per unit are calculated by dividing the total expenses for each initiative by the number of units tested. Costs per unit with elevated lead dust are calculated by dividing the total expenses for each initiative by the number of units tested with elevated dust. Expenses for the pilot included fees for the laboratory analysis of 91 tests. Targeted mailing expenses include printing, postage, and laboratory analysis. Staff time is not included as an expense.