National Center for Healthy Housing

# New York State's Childhood Lead Poisoning Primary Prevention Program: Year 7 Summary Report

***April 1, 2013 – March 31, 2014***

Prepared by the National Center for Healthy Housing for the New York State Department of Health, Bureau of Community Environmental Health and Food Protection, under Contract #CO27566

*(DRAFT)*

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# Introduction

Childhood lead poisoning remains a significant public health problem in the United States and in New York State (NYS), which consistently ranks high on key risk factors associated with lead poisoning; including many young children living in poverty, a large immigrant population, and an older, deteriorated housing stock.[1]

In children, lead exposure can result in neurological damage, including intellectual impairment, developmental delays, learning disabilities, memory loss, hearing problems, attention deficits, hyperactivity, behavioral disorders, and other health problems. Lead is particularly dangerous to children under the age of six due to their normal hand-to-mouth activity, which increases the potential for exposure, as well as the rapid growth and development of their nervous systems and their greater rate of lead absorption in their bodies.[2]

New research links even low low-level lead exposure to harmful effects,[2] such as hampering the ability of children to do well in school. These studies suggest that lead exposure is responsible for a significant and modifiable effect on the achievement gap. In an ecological study of third- and eighth-grade achievement scores for 57 counties in New York, excluding New York City, researchers found that the percent of children in a county with blood lead levels (BLLs) greater than or equal to 10 µg/dL explained 8–16% of the variance in reading and math test scores even when adjusting for indicators of poverty.[3]

Preventing lead poisoning will enable NYS children to enter school ready to learn and to succeed academically. Additional proactive action to reduce children's exposure to lead remains a state public health priority.

This report summarizes the progress of 15 NYS jurisdictions in implementing the Childhood Lead Poisoning Primary Prevention Program since its inception in 2007, with a particular focus on the April 1, 2013 to March 31, 2014 period. Prior annual reports for the program may be found on the National Center for Healthy Housing web site at www.nchh.org/Training/New-York-State-Primary-Prevention-Initiative.aspx.

# 1. Background

## 1.1 A Stubborn Public Health Problem

After decades of progress in reducing exposure to lead sources, such as gasoline and paint, and the corresponding decline in blood lead levels, researchers and practitioners now agree that there is no safe level of lead in children's blood. The U.S. Centers for Disease Control and Prevention (CDC) announced in 2012 that it would no longer use the term "level of concern" in conjunction with a child's blood lead level. All detectable levels of lead are of concern. CDC instead set a "reference value" of 5 µg/dL as the level at which a child would be considered to have significantly more lead in their body than their peers.

Approximately 535,000 U.S. children ages 1–5 have BLLs greater than 5µg/dL.[4] Similar to national trends, the overall incidence (newly diagnosed cases) of lead poisoning among NYS children under age six has steadily declined since 1998.[5] However, the prevalence of childhood lead poisoning in NYS for children with BLLs greater than or equal to 5µg/dL is 4.6%, compared to the national prevalence rate of 2.6%, and thousands of children are still at risk.[6]

While it is clear that lead poisoning is a serious public health concern in many New York communities, the risk for childhood lead poisoning is not evenly distributed across the state. Lead hazards are more prevalent in some communities and, as a result, blood lead levels vary greatly across the state. For the three-year period from 2010–2012, 75% of children under age six newly identified with BLLs greater than or equal to 10 µg/dL resided in the 12 highest incidence counties: Kings, Erie, Queens, Bronx, Oneida, Monroe, Onondaga, Westchester, New York, Orange, Albany, and Nassau.[7] Expanding this list to include 12 additional counties (Niagara, Broome, Dutchess, Richmond, Suffolk, Chautauqua, Rockland, Rensselaer, Montgomery, Schenectady, Fulton, and Ulster) accounts for a full 90% of incident cases.[7] Not surprisingly, these high-risk communities also have higher proportions of pre-1950 housing stock and low-income and minority populations.

At the same time, elimination of lead hazards and childhood lead poisoning in the highest-risk communities can be especially challenging due to a wide range of factors, including poverty, unemployment, low educational attainment, limited availability of affordable housing, and scarcity of financial resources for property maintenance and improvements. Elimination of childhood lead poisoning requires a variety of statewide actions, including intensive efforts targeting communities at highest risk.

## 1.2 Sources of Lead Exposure

Despite a 1978 federal government ban of lead in residential paint,[8] there are still an estimated 38 million pre-1978 dwellings nationwide that contain old layers of lead-based paint (LBP) that become hazardous when a home is in disrepair or when the paint is disturbed by repairs or renovation.[9] Approximately 24 million homes have LBP hazards (lead in soil or dust, or peeling paint),[9, 10] and more than four million of these house young children.[9] The most common sources of lead in the U.S. include lead-based paint and lead-contaminated dust and soil.[11]

## 1.3 The Societal Impacts of Lead

Low levels of lead exposure are detrimental to a child's ability to thrive. A series of North Carolina

studies of over 57,000 children found that children with a BLL as low as 4 µg/dL at three years of age were significantly more likely to be classified as learning-disabled than children with a BLL of 1 µg/dL.[12] In a study of 35,000 Connecticut children, researchers observed the same associations between blood lead levels as low as 3–4 µg/dL and decreased achievement on reading and math tests.[13] These findings were further confirmed by a study of 48,000 school children in Chicago, where BLLs as low as 5 µg/dL were associated with lower scores on third-grade reading and math tests.[14]

Childhood lead exposure is also linked to juvenile delinquency later in life. Lead-poisoned children exhibit antisocial behavior, aggression, and hyperactivity—all of which can lead to delinquent behavior.[15, 16] One study concluded that lead emissions from gasoline in automobiles explained 88% of the violent crime in America.[15] When the use of leaded gas decreased, so did the crime rates. Another study that followed children from womb to adulthood found that higher childhood blood lead levels were associated with higher adult criminal arrests.[17] A 2012 study by Mielke and Zahran in six cities corroborated earlier findings of the connection between childhood lead poisoning and violent behavior at the city level.[18] These studies all show that the use of leaded gasoline strongly correlates with the increase of violent crime in the past and suggests that a benefit to preventing children's lead exposure is a decrease in future adult crime.

Childhood lead poisoning imposes a financial burden on all taxpayers. Costs stemming from lead exposure are well established; one recent estimate stated the societal costs of lead poisoning to be $50.9 billion in a single year.[19]

## 1.4 NYS Childhood Lead Poisoning Primary Prevention Program

The CDC and its advisory committee recommend primary prevention, "a strategy that emphasizes the prevention of lead exposure, rather than a response to exposure after it has taken place."[20] In 2007, the NYS legislature passed, and the governor signed into law, a program to curtail childhood lead poisoning dramatically (PHL1370(a)(3)). The Childhood Lead Poisoning Primary Prevention Program (CLPPPP) authorized health departments to gain access to high-risk homes for the purposes of education and inspection. This represented a significant policy shift since previously health departments could only gain access to a home if a child had already been diagnosed with an elevated blood lead level. The new approach enabled a more proactive and effective approach. Table 1 presents the annual funding levels for the program over its seven-year history. For additional background information on the CLPPPP, please see *New York State Task Force on the Prevention of Childhood Lead Poisoning Preliminary Report 2009*.[i]

[i] *http://nchh.org/LinkClick.aspx?fileticket=iZ%2f%2fge9ofOY%3d&tabid=195*

**Table 1: NYS Childhood Lead Poisoning Primary Prevention Program Funding Level**

| Year | Annual Funding Amount | Authority |
|---|---|---|
| 2007–2008 | $3 million | Pilot Program: Public Health Law Section 1370(a) (3) |
| 2008–2009 | $5.4 million | Pilot Program: Public Health Law Section 1370(a) (3) |
| 2009–2010 | $7.7 million | Permanent Program: Public Health Law Section 1370(a) (3) |
| 2010–2014 | $10.2 million | Permanent Program: Public Health Law Section 1370(a) (3) |

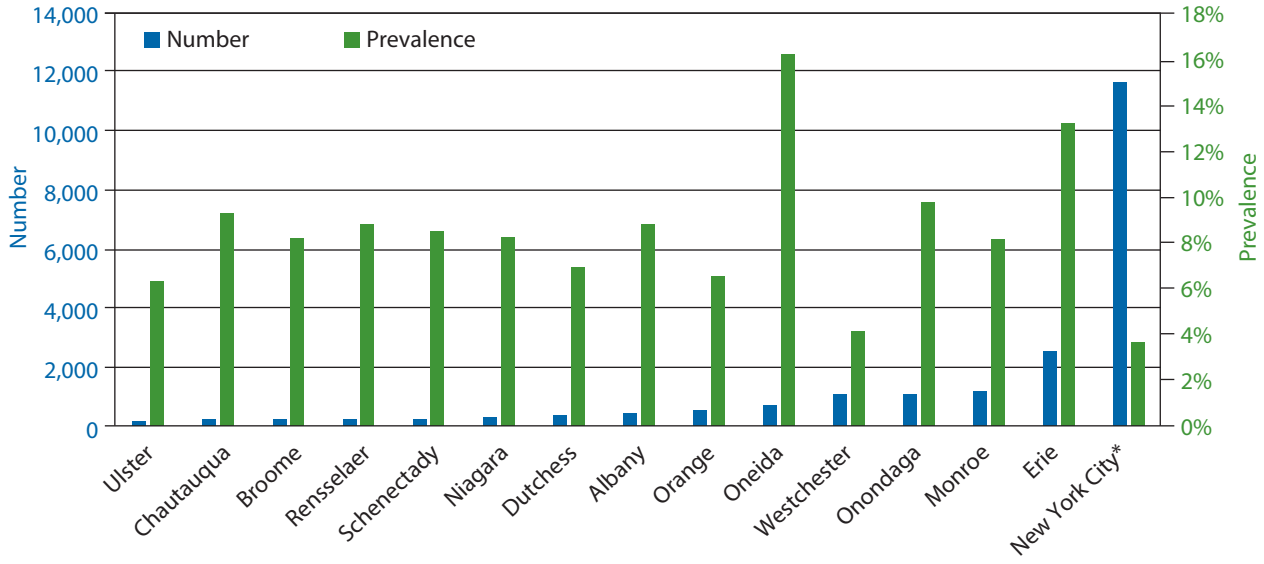
The CLPPPP grantees seek to achieve five goals:

1. Identify housing at greatest risk of lead-based paint hazards,
2. Develop partnerships and community engagement to promote primary prevention,
3. Promote interventions to create lead-safe housing units,
4. Build lead-safe work practices (LSWP) workforce capacity, and
5. Identify community resources for lead-hazard control.

The eight original pilot locations (funded in 2007) included Albany, Erie, Monroe, Oneida, Onondaga, Orange, and Westchester counties and New York City. In 2008, four new sites received funding: Broome, Chautauqua, Dutchess, and Schenectady counties. In 2009, Niagara and Rensselaer counties received funding. The Year 4 (2010–2011) addition of Ulster County brought the total number of grantees to 15. From 2011–2014 (Years 5, 6, and 7), 15 grantees continued operating primary prevention programs.

Figure 1 shows the number of children with BLL greater than or equal to 5µg/dL in 2011 and the prevalence rates in the 15 primary prevention jurisdictions.

**Figure 1: The Number and Prevalence of Children with BLLs above 5µg/dL in 2011 in NYS**




**New York City is composed of five counties—Kings (Brooklyn), Queens, Bronx, New York (Manhattan), Richmond (Staten Island).*
*Source: U.S. CDC. Childhood Lead Poisoning New York Data, Statistics, and Surveillance, 2011.*

# 2. Methods

The National Center for Healthy Housing (NCHH) provides technical and evaluation assistance to the NYSDOH and to CLPPP grantees. The contract enables NCHH field investigators to work with each grantee to provide model practices, peer networking, and support on program design and implementation issues. Investigators also join NYSDOH staff on site visits and in conference calls and meetings. NCHH gathers information from grantees about their actions and progress toward achieving each of the Primary Prevention Program's five goals.

This report is based on two sources of data: (1) narrative descriptions in grantee work plans and quarterly reports and (2) unit-based quantitative data collected by grantees and submitted to NCHH for analysis. To help grantees capture the unit-based housing data, grantees use a Microsoft Access database developed by NCHH.[ii] At the end of March 2014, grantees sent their Access database to NCHH for analysis. NCHH then compiled data for all grantees and analyzed the data using SAS version 9.3.

Except where cumulative results are noted, the data presented in this report come from the April 2013 to March 2014 dataset (hereafter referred to as "Year 7"). These data include the 6,685 housing units first visited between April 1, 2013 and March 31, 2014, and 4,885 housing units carried over from prior years for a total of 11,570 housing units inspected by grantees in Year 7. Note that all data summarizing the program as a whole is influenced by the relative contribution of each grantee (e.g., grantees who visit and inspect more units have a greater influence on program totals). Please refer to *New York State's Childhood Lead Poisoning Primary Prevention Program: Grantee Impact Summaries, April 1, 2013–March 31, 2014*, for additional details on the contribution of each grantee.[iii]

Units inspected before April 2013 and found to have no hazards or cleared of all hazards before April, 2013 were excluded. Interior and exterior activities (assessments, hazards identified, clearance) are reported on separately. Unless otherwise noted, the data presented in this report refer to interior-only activities (Appendix A).[iv]

[ii] *Note: Due to changes in the data collection system over time, comparing data across years is not possible for all variables. For example, some data elements previously reported are no longer collected, and the revised system added a number of new data elements.*

[iii] *Available at www.nchh.org/Training/New-York-State-Primary-Prevention-Initiative.aspx*

[iv] *Reporting of exterior activities for multifamily buildings varied greatly among grantees, and, as a result, the term "units" previously included both individual units and multifamily buildings. Moving forward, the data collection system will be revised to allow for reporting of interior activities by housing unit and exterior activities by building. In the meantime, NCHH devised a method for identifying units with interior activities using the current data structure. Please refer to Appendix A for details.*

# 3. Results

Since the CLPPP Program's inception on October 1, 2007, grantees have visited and inspected the interiors of 31,615 homes, impacting approximately 19,500 children (Table 2).[v] See *New York State's Childhood Lead Poisoning Primary Prevention Program: Grantee Impact Summaries, April 1, 2013–March 31, 2014*, for an impact summary for each of the 15 grantee programs.

Since the beginning of the program, grantees have cleared (deemed lead-safe) 72.6% (7,759) of the units having one or more confirmed or potential interior hazards. Typically, clearing a housing unit includes conducting a visual inspection to assure that all lead-based paint hazards have been treated appropriately and performing dust wipe clearance tests to confirm that lead dust levels on floors, window sills, and window wells are below the national standards. Grantees experience a range of barriers in clearing units, including owners who delay compliance with notices, are unresponsive to notices, or who lack the skills or resources to comply. Additionally, many jurisdictions may lack adequate recourse to enforce compliance with notices, since lead violation cases may receive lower priority among a myriad of other administrative or criminal violations heard by city and housing courts. The courts vary in format and resources across the state. Reducing compliance timeframes and increasing compliance rates is a priority for the state and grantees.

[v] *Includes activities that address the interior of a unit only. For comparison, using all interior and exterior activities for the program to date results in 43,408 units visited and inspected, 1,722 units visited but not yet inspected, and 20,531 children impacted. Please refer to Appendix A for additional details*

**Table 2: Impact of the Primary Prevention Program between October 1, 2007 and March 31, 2014[vi]**

| Activity | Year 7<br>April 1, 2013–March 31, 2014 | Cumulative<br>October 1, 2007–March 31, 2013 |
|---|---|---|
| Units visited and inspected | 11,570 | 31,615 |
| Units with confirmed or potential lead-based paint hazards | 4,881 | 10,678 |
| Units cleared of all hazards | 1,962 | 7,759 |
| Children impacted by the program | 8,410 | 19,468 |

[vi] *Table 2 includes activities that address the interior of a unit only. Previous-year reports included activities that addressed the interior, the exterior, or both. For comparison, using all interior and exterior activities the data for Year 7 is as follows: 16,748 units visited and inspected, 10,021 units with confirmed or potential hazards, 2,704 units cleared of all hazards, and 8,742 children impacted by the program. Please refer to Appendix A for additional details.*

## 3.1 Housing Units Visited and Their Characteristics

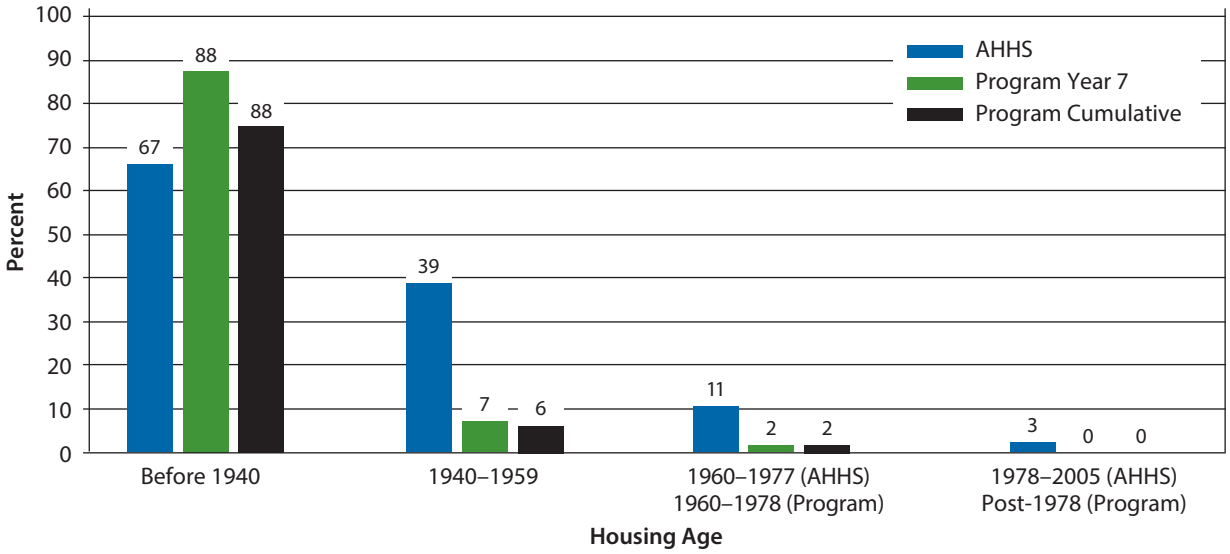
In the initial design of the Primary Prevention Program, NYSDOH identified the communities of concern and areas of high risk by identifying municipalities with an annual average of 16 or more incident cases of childhood lead poisoning and repeating the analysis at the ZIP code level to identify ZIP codes with an annual average of seven or more incident cases. A community had to meet both of these criteria to qualify as a target ZIP code. Individual grantees may further refine their target areas within these target ZIP codes.

The vast majority of units visited by the grantees (85%) were built before 1940; 86% were rental units and 9.5% were owner-occupied. Twenty-four percent of units visited through the program were single-family homes, 33% were multifamily properties with two units, 42% were multifamily properties with three or more units, and 4% of units were vacant.[vii]

The U.S. Department of Housing and Urban Development's 2011 American Healthy Homes Survey (AHHS) confirmed that pre-1940 units were most likely to contain significant lead-based paint hazards. Approximately 88% of inspected units with confirmed or potential, interior lead-based paint hazards were built prior to 1940 (see Figure 2).

[vii] *Percentages do not total 100% because (1) data on occupancy status and unit type are collected separately, and (2) data on occupancy status and/or unit type are missing for some units visited through the Primary Prevention Program.*

**Figure 2: Housing Units with Significant Lead-Based Paint Hazards by Housing Age in the U.S.**




*AHHS Data Source: U.S. Department of Housing and Urban Development, Office of Healthy Homes and Lead Hazard Control. (2011). American healthy homes survey: Lead and arsenic findings. Retrieved from http://portal.hud.gov/hudportal/documents/huddoc?id=AHHS_REPORT.pdf*

## 3.2 Inspection Activities, Identified Hazards, and Clearance Status of Inspected Housing Units

Grantees partner with many agencies to facilitate inspections. In fact, the authorizing legislation for the program encourages such collaboration, including, for example, "deputizing" code enforcement agencies to conduct housing inspections on the health departments' behalf. The following individuals conducted inspections in Year 7:

- CLPPPP staff at local health departments (63%);
- Staff of a code enforcement agency supported or deputized by CLPPPP (34%); and
- Staff of another organization supported or deputized by the CLPPPP (3%).

Grantees used a variety of interior inspection techniques, with interior visual assessments being the most frequently used assessment (95% in Year 7). X-ray fluorescence (XRF) testing, which uses an x-ray instrument to detect the presence of lead, was reported for approximately 39% of the units inspected, and dust wipe sampling was performed during 19% of inspections.[viii, ix]

Table 3 shows the results of grantee inspections in Year 7 and cumulatively, including those units carried over from previous years. Table 3 also includes information about exterior hazards identified and cleared.[x] The program identified more exterior hazards than interior hazards in both Year 7 and cumulatively.

Many factors affect time from inspection to clearance, including inclement weather in the winter season and enforcement actions needed to achieve clearance. Because neither the CLPPPP nor the department's secondary prevention program (a case management program that responds to children with elevated blood lead levels) provide property owners with funding for repairing homes, in most cases compliance time frames are dependent on the owner's ability to pay

[viii] *Note: This section discusses the use of dust wipe sampling during the inspection process. It does not include information on dust wipe sampling used during clearance.*

[ix] *Note: Four grantees (Erie, New York City, Onondaga, and Westchester) account for approximately 66% of XRF activities. Similarly, three grantees (New York City, Monroe and Oneida) account for approximately 87% of dust wipe sampling activities.*

[x] *Exterior activities in multi-unit buildings may reflect either a single unit or an entire building.*

**Table 3: Results of Grantee Inspections, Year 7 and Cumulative**

| | Units with Hazards | | Units Sent Notice | | Units Cleared | |
|---|---|---|---|---|---|---|
| | Year 7 | Cumulative | Year 7 | Cumulative | Year 7 | Cumulative |
| Confirmed Interior Hazard | 3,858 | 9,223 | 3,521 | 8,886 | 1,790 | 7,155 |
| Confirmed Exterior Hazard | 4,901 | 9,565 | 4,775 | 9,439 | 2,194 | 6,858 |
| Potential Interior Hazard | 1,023 | 1,455 | 731 | 1,163 | 176 | 608 |
| Potential Exterior Hazard | 3,288 | 5,207 | 2,978 | 4,897 | 791 | 2,710 |

*Source: Unit-based data for units first inspected between April 1, 2013 and March 31, 2014, or carried over from previous years; and units inspected between October 1, 2007 and March 31, 2014.*

*Note 1: Potential hazards are hazards identified exclusively through visual assessment, without testing to confirm the presence of lead.*

*Note 2: Excludes 1,540 units with "unspecified hazards" only. "Unspecified hazards" are hazards identified prior to the changes to the data collection system in April 2011 that are unknown to be exterior, interior, or both.*

for the required repairs.[xi] State laws and regulations allow for interim control treatments since such treatments have been found to be effective at reducing lead exposure. However, interim control treatments must be maintained through ongoing repairs. The data from this evaluation suggest that many property owners are not conducting ongoing maintenance of their units, resulting in "repeat" hazards. Of the 11,570 units inspected by the CLPPPP in Year 7, 243 were previously found to have lead hazards by local health departments during an inspection for an elevated BLL. Among these units where a hazard was previously identified, 130 (53.5%) had a definitive interior hazard identified during the CLPPPP inspection. Beyond the problem of units with repeat hazards, apartment buildings that have previously been the subject of inspections for children with elevated BLLs are frequently the location of additional units with lead hazards. Grantees often use these addresses to target their primary prevention efforts. In Year 7, grantees inspected 427 units associated with properties where a lead hazard had been identified as part of a previous elevated BLL investigation for another unit in the building (but not within that specific unit). Of these, 253 (59.2%) had a definitive interior hazard identified as part of the CLPPPP investigation, suggesting that once a lead hazard is identified in any unit of a multifamily building, other units in the building may be appropriate targets for primary prevention inspections.

In Year 7, grantees inspected 476 units associated with properties (e.g., in a building with multiple dwelling units) that had previously been part of an elevated BLL inspection resulting in an identified lead hazard.

[xi] *For example, as a requirement of law in New York City if owners fail to correct lead paint hazards safely and in a timely fashion, the address is referred to the Housing Preservation and Development's Emergency Repair Program. The owner is billed for the service or a lien is placed on the property to accelerate the remediation of lead hazards identified during an inspection.*

## 3.3 Enforcement of Remediation and Confirmation of Clearance

Notice and Demand orders are the primary method by which local health departments notify property owners when lead-based paint hazards are identified during an investigation. Grantees used them in 52% of the 4,224 units with a first notice reported. Grantees used additional enforcement efforts for 1,194 of the 4,881 units with one or more confirmed or potential interior hazards. These actions included office or field conferences, departmental or administrative hearings, court hearings, and fines. Grantees most frequently used the additional enforcement technique of departmental or administrative hearings (458 actions).

Almost 73% of units have been cleared to date of confirmed or potential interior hazards. About 12.5% of these units took longer than one year to achieve clearance. Figures 3a–3d show the median number of days from inspection to interior clearance and the percentage of units that took more than one year to achieve clearance by unit type for Year 7 and cumulatively.

### Definitions of Actions

**Office or field conferences**: Consultations between the property owner and CLPPPP staff prior to the Notice and Demand due date to clarify scope of work, training requirements, and/or tenant protection or relocation needs.

**Departmental or administrative hearings**: Formal CLPPPP or health department hearings after the Notice and Demand due date has passed. These hearings are usually presided over by Board of Health members or municipal attorneys; property owners can appear with legal representation if needed. Barriers to compliance with the Notice and Demand and possible solutions are discussed; provisional extension of the Notice and Demand due date is often provided.

**Court hearings and fines**: After a specified time period (varies by program), noncompliant cases are referred to municipal or housing courts at the city and/or county level to allow stronger enforcement measures to be levied, including the assessment of a penalty or fine.

## Figures 3a–3d: Compliance Rates and Time Frames

**Figure 3a: Time to Clearance among Units that Achieved Clearance, Program Total**

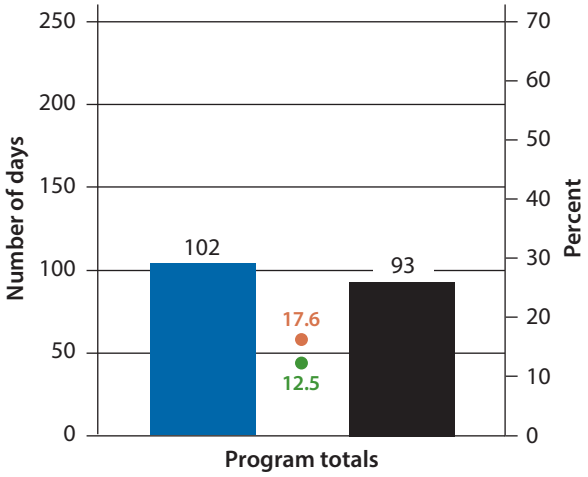



**Figure 3b: Time to Clearance among Units that Achieved Clearance, by Building Type**

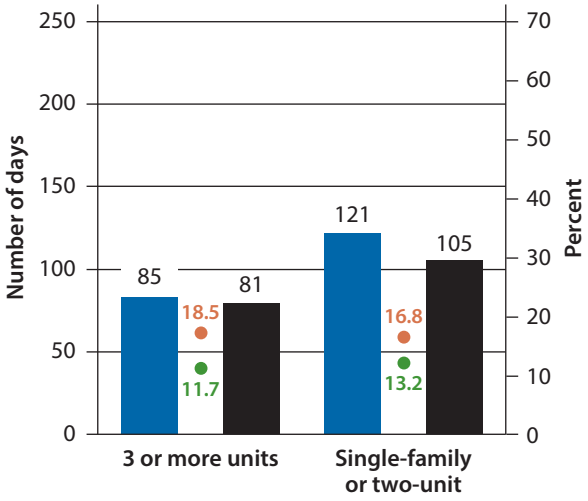



**Figure 3c: Time to Clearance among Units that Achieved Clearance, by Enforcement**

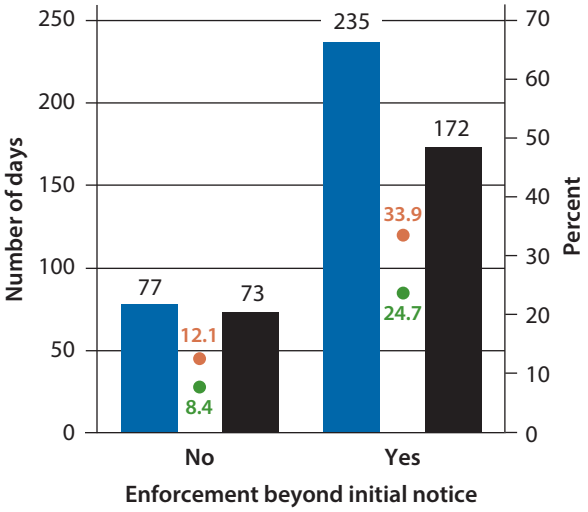
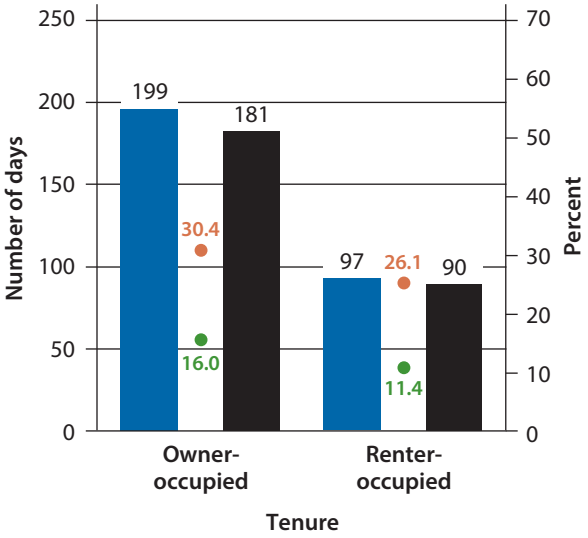



**Figure 3d: Time to Clearance among Units that Achieved Clearance, by Tenure**




Median number of days, Year 7
Median number of days, cumulative
% more than one year, Year 7
% more than one year, cumulative

## 3.4 Benefits for Children and Others

A significant number of children benefited from the program in Year 7, with grantees reporting the following:

- Visiting and inspecting 5,567 housing units where at least one child was present, reaching a total of 8,410 children.
- Making 1,387 housing units where at least one child was present lead-safe, impacting a total of 1,983 children.
- Referring 4,477 children for blood lead level testing as a result of these visits.[xiii]

As funding for the CLPPPP has increased, so has the number of units visited and inspected, units cleared of all hazards, and children impacted. Figure 4 shows that at the early three-million-dollar funding mark, 108 units were made lead-safe by the program, compared to an annual average of 1,629 units at the 10-million-dollar funding level. The impact of a greater investment into the program holds true even when the number of counties participating in the program remained constant between October 2009 and March 2014. As grantees gain capacity, refine enforcement and partnership models, and deepen their reach into their communities, the program impact increases.

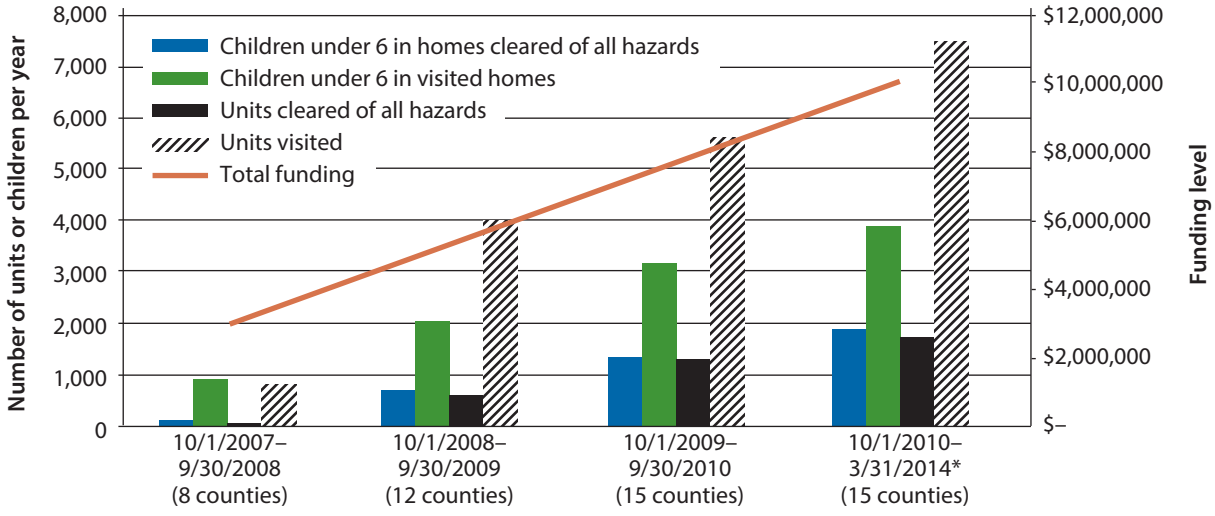
[xiii] *Children not tested at age one or two were referred for blood lead level tests, as were children who may have been tested previously but whose living environment warranted additional testing.*

## 3.5 Other Grantee Outcomes

Grantees are required to conduct a program evaluation including cost analysis, outcome evaluation, or a continuous quality improvement project or process evaluation, depending on the needs of their program. Traditionally, NYSDOH requested a cost analysis to quantify the value of program services. Cost analysis conducted could include (for example):

- Calculating the cost of program services through time studies and linking them to program outcomes;

**Figure 4: Average Annual Number of Units Visited and Children Impacted**




*Numbers annualized over time

- Estimating local healthcare expenditures resulting from lead exposure;
- Estimating lifetime earning loss as a result of lead exposure and IQ loss;
- Estimating the cost of special education and juvenile delinquency as a result of lead poisoning; or
- Simple return-on-investment calculations.

During Year 7, NCHH developed several technical assistance briefs and webinars, along with providing one-on-one technical assistance to facilitate other types of outcome evaluation and process improvement activities, including:

- Assessing the burden on the Early Intervention Programs as a result of lead exposure;
- Estimating more accurate prevalence rates in high-risk communities with low screening activity;
- Conducting post-remediation follow-up to assess the longevity of lead hazard control; and
- Comparing prevalence rates and trends between target communities and similar, non-targeted areas.

Highlights from the 2013–2014 reports include:

Chautauqua County conducted a cost effectiveness analysis of referral methods that result in complete and comprehensive housing inspections. They found that door-to-door canvassing was the most expensive method and did not yield consistent access to interiors for risk assessments. They found that letters to parents of newborns and children with lead levels of 5–14 µg/dL resulted in a higher inspection rate and was much less costly. They have changed their methods to identify and recruit families into the primary prevention initiative.

Monroe County evaluated the longevity of LHC treatments, compliance time frames, and the difference between the use of an intact/deteriorated standard versus a *de minimis* standard used by the city of Rochester. They found that 82% of units reinspected three to four years post-remediation as a part of the outcome evaluation were found to have hazards. This information is being used to incentivize more permanent treatments to high-risk window components and to identify LBP hazards in need of correction during the initial inspection more comprehensively.

Schenectady County conducted a study to estimate prevalence rates based on low lead screening rates in their community more accurately. They uncovered a significant number of children going unidentified—especially in their high-risk target areas—due to lack of required lead testing. This information is being shared with community and governmental stakeholders to increase lead screening efforts.

During the 2014–2015 grant year, outcomes evaluation will emphasize process improvement, such as improving targeting efforts to serve high-risk housing, assuring comprehensive inspectional efforts, increasing compliance rates for lead hazard control and decreasing compliance time frames, and strengthening partnerships to increase efficiencies and leverage resources.

# Conclusions and Recommendations

Since the CLPPPP's inception, grantees have visited and inspected the interior of almost 32,000 homes, identified potential lead hazards in 10,678, and have cleared (deemed lead-safe) 72.6% (7,759) of the units. As a result, over 9,200 children who were previously living in homes with potential lead hazards are now at a greatly reduced risk for lead poisoning. The research overwhelmingly shows that this translates into fewer kids being labeled "learning disabled," fewer children who will score poorly on third-grade test scores (scores that we know portend future high school drop-out), and more New York children will be placed into advanced and intellectually gifted programs. At a total program investment of approximately $56.9 million since 2007, this amounts to just over $6,000 per child—a fraction of the cost of special education for a child with lead exposure, which has been conservatively estimated at $38,000 over three years.[21]

The evaluation data from this initiative can be used in several ways. First, the data can be used to make midcourse improvements and gain greater visibility into areas that need attention. Second, the data can help evaluate the societal outcomes of the program by connecting program data to other data sets. For example, Oneida County has used its data to examine the impact on children receiving early intervention services. Exploring the connections between the CLPPP intervention and impacts on school performance and/or juvenile delinquency can help to elucidate the value of the state's investment into this program.

NCHH and NYSDOH began examining prior program evaluation data in late 2013 to develop recommendations for midcourse adjustments that were presented to grantees by webinar in March 2014. NYSDOH and NCHH further explained the recommendations at the annual meeting of the grantees in April 2014 and conducted hands-on sessions to explore the barriers and opportunities to their implementation. The expectation is that grantees will implement the recommendations in their work plans for Year 8. The recommended refinements included the following:

**1. Targeting the Highest-Risk Places**
The state and its grantees are focused on the highest-risk counties, neighborhoods, and housing units. To facilitate targeting, in Year 7, NYSDOH updated its highest-risk ZIP code analysis using updated blood lead surveillance data. These data have been shared with grantees to help them focus their efforts in Year 8. Grantees are using new tools, such as birth record matching with high-risk areas, and data on units and properties where prior hazards have been found to ensure these units provide no ongoing risk to children.

**2. Expanding and Ensuring Consistency in the Scope of Hazard Assessments Being Performed**
Since the correction of hazards in high-risk homes is based on an assessment of hazards, the scope and quality of those assessments is paramount to the success of the initiative. In Year 8, grantees will adopt more comprehensive hazard assessment protocols. For example, NYSDOH is increasing the expectation that inspections in the future grant year will include interior assessments.

**3. Decreasing the Compliance Time Frames for Making Homes Lead-Safe**
Perhaps one of the most pernicious problems faced by grantees is gaining timely compliance with Notice and Demand orders. Lengthy court procedures, complicated ownership arrangements for units, and the simple lack of funding to address hazards can cause hazardous units to languish. A

few grantees have successfully used the Spiegel Act to gain property owner compliance where state funding is being used for housing assistance. In Year 8, grantees will learn more about this legal tool and explore its use for their jurisdictions. Additional enforcement mechanisms include:

- Encouraging code enforcement officials to adopt systematic rental property inspection programs and use of the Property Maintenance Code for citing deteriorated paint in pre-1978 housing.
- Maximizing the use of the deputizing authority offered under the public health law.
- Exploring housing courts, or agreements with local code enforcement offices, prosecutors, and judges to expedite the resolution of cases involving lead-paint hazards.

**4. Strengthening Collaborations**

The primary prevention law provides critical authority to help agencies get into high-risk homes, but because the funding cannot be used for lead hazard control, successful collaborations with both HUD-funded lead hazard control and case management services are paramount to the program's success. In the coming year, grantees will reinforce relationships with HUD lead hazard control grantees to secure lead hazard control funding for units investigated by the CLPPP. They will also facilitate stronger collaborations with secondary intervention programs. Additional collaboration recommendations include the following:

- Increasing partnerships with philanthropic organizations and hospital community benefit programs.
- Leveraging the opportunity for Medicaid reimbursement for primary and secondary prevention visits for lead poisoning.
- Funding partner agencies to assist in identification of high-risk units and inspection strategies, while assuring performance of subcontracted agencies at the county level.

We have the following additional recommendations for NYSDOH:

- Improve the transparency and access to data that can be used by the grantees and their community partners to target primary prevention activities. This includes making public the high-risk ZIP codes for lead, working with the Department of State or others to make housing code enforcement data accessible to the public, providing grantees with predictive demographic indicators, and/or providing blood lead data at more refined geographic scales (e.g., census tracts or blocks) (while still protecting individual privacy).
- Review the 67.2 regulations for follow-up related to a child with an elevated blood lead level (EBL) and consider more stringent requirements for property owners with a prior history of code violations or EBL cases.
- Collaborate with the state Medicaid office to examine the extent to which children enrolled in Medicaid are receiving appropriate environmental follow-up according to the Early, Periodic, Diagnostic, and Testing schedule. Explore the feasibility of the state Medicaid office or private insurers reimbursing county health departments for environmental investigations for lead.
- Collaborate with the Department of Education to examine school performance alongside of childhood lead exposure.
- Collaborate with the Department of State to train code enforcement officers in lead-safe work practices.
- Recommend the reformation of the Governor's Task Force on Childhood Lead Poisoning Prevention to serve as the foci for the interagency recommendations referenced above.

# Appendix A: Selection of Units with Interior Activities

This appendix describes the methodology used in selecting units with interior activities for analysis and the rationale for this change in approach.

**Rationale:** In previous CLPPPP evaluation reports, the term "units" included both individual units and, in some cases, multifamily buildings. However, in our data cleaning efforts, we found that reporting of exterior activities for multifamily buildings varied greatly among grantees. For instance, some grantees created a single record of exterior activities for a multifamily building and associated that with a single, random unit within the building. Other grantees reported a similar exterior assessment of a multifamily building by recording that activity on the assessment form for every unit within a building. In some cases, grantees initiated a separate assessment form for exterior activities that was not linked to any units at all. Finally, some grantees focused primarily on exterior activities and therefore most of their units were buildings. Thus, "units," as reported on previously, were actually a mix of single-family housing units, multifamily housing units, and multi-unit buildings. The data collection system will be revised in the future to allow for reporting of interior activities by housing unit and exterior activities by building. In the meantime, NCHH devised a method for identifying units with interior activities using the current data structure. This enabled NCHH to report on activities that address actual housing units, a primary focus of the program.

**Method for identifying units with interior activities:** Units with interior activities are identified as any unit with an interior assessment or hazard identified. For units with interior hazards, interior visual assessment, dust sampling, or other interior assessment, this identification is straightforward. However, there is a small subset of units with XRF testing that have no interior hazards identified and no other interior assessment (no interior visual assessment, dust sampling, or other interior assessment). The current data collection form does not distinguish between XRF testing done on the building exterior or unit interior, and absent other information that would identify the unit as one with interior activities, a conjecture must be made to estimate whether the unit has interior activities.

To estimate how many of these unassigned units are likely to have had interior activities, NCHH used the proportion of units with XRF testing (but no other interior assessment) that did have interior hazards identified. The assumption is that the proportion of units assessed with an XRF on the interior would not differ substantially based on whether an interior hazard was identified. This proportion (Pi) was calculated for each grantee individually using the cumulative dataset and applied to their unassigned units (Table A1).

For example, in Albany County, approximately 376 units were inspected. Of these, 360 had data to indicate a clear interior inspection or hazard and 16 were unassigned (had XRF testing, but no other definitive interior activity). Of the two units in the cumulative dataset that had XRF testing (but no other interior inspection), one (50%) had an interior hazard identified, indicating that the interior was assessed. This proportion (50%) is Albany's Pi for the cumulative dataset. Multiplying the 16 unassigned units by 50% (Albany's Pi) results in eight additional units classified as having interior activities for a total estimate of 368 units (360+8).

For additional information, contact Amanda Reddy (areddy@nchh.org).

## Table A1. Data Used to Estimate *Pi* and Results Using *Pi* for Year 7

| Grantee | Data Used to Estimate Pi (Cumulative) | | Results Using Pi (Year 7) | | | | |
|---|---|---|---|---|---|---|---|
| | N | Estimated Pi | # Inspected | Data Indicated Clear Interior (1) | # with Imputation | Percent Interior | Estimated # Interior Housing Units Inspected |
| Albany | 2 | 0.50000 | 376 | 360 | 16 | 98% | 368 |
| Broome | 23 | 0.00000 | 299 | 283 | 16 | 95% | 283 |
| Chautauqua | 61 | 0.00000 | 277 | 204 | 54 | 74% | 204 |
| Dutchess | 14 | 1.00000 | 525 | 319 | 2 | 61% | 321 |
| Erie | 3638 | 0.00082 | 3,441 | 1,460 | 1942 | 42% | 1,462 |
| Monroe - City | 1 | 1.00000 | 3,636 | 3,636 | 0 | 100% | 3,636 |
| Monroe - County | 666 | 0.92492 | 460 | 378 | 82 | 99% | 454 |
| New York City | 64 | NA | 1,402 | 1,402 | 0 | 100% | 1,402 |
| Niagara | 27 | 0.09375 | 2,533 | 225 | 47 | 9% | 229 |
| Oneida | 9 | 0 | 931 | 485 | 26 | 52% | 485 |
| Onondaga | 43 | 0.33333 | 990 | 983 | 3 | 99% | 984 |
| Orange | 26 | 0.90698 | 375 | 370 | 5 | 100% | 375 |
| Rensselaer | 28 | NA | 215 | 212 | 0 | 99% | 212 |
| Schenectady | 101 | 0.92308 | 181 | 177 | 4 | 100% | 181 |
| Ulster | 2 | 0.82143 | 185 | 104 | 9 | 60% | 111 |
| Westchester | 23 | 0.17822 | 922 | 852 | 67 | 94% | 864 |
| | | | **16,748** | **11,450** | | | **11,570** |

*(1) Unit had an interior inspection or an interior hazard.*
*(2) NA = No imputation was needed for Rensselaer and New York City.*

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