

# Preventing Lead Poisoning in New York City

## Annual Report 2005



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**Annual Report 2005**

*New York City  
Department of Health and Mental Hygiene*



## Acknowledgments

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For copies of this report and/or more information about the Lead Poisoning Prevention Program of the New York City Department of Health and Mental Hygiene:

**Call 311 and ask for the Lead Poisoning Prevention hotline.**

This report can be downloaded as a PDF from [www.nyc.gov/lead](http://www.nyc.gov/lead).

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# Executive Summary

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*Since 2001, the New York City Department of Health and Mental Hygiene (DOHMH) has issued an annual report describing progress in preventing childhood lead poisoning. This 2005 annual report covers both lead poisoning among New York City children and the activities and accomplishments of the Lead Poisoning Prevention Program (LPPP). Since LPPP provides services to lead-poisoned children less than 18 years of age, data presented in this report, except where specified, refers to that age group. Within that group, children from 6 months to less than 6 years of age — especially those between 1 and 3 years old — are at greatest risk for lead poisoning. Specific data on those particular age groups are provided in some sections of this report.*

*This Annual Report, for the first time, also includes a chapter on lead poisoning among New York City adults and the lead poisoning prevention activities of the Environmental and Occupational Disease Epidemiology (EODE) Program. EODE is responsible for surveillance and case coordination services for lead-poisoned males and non-pregnant females 18 years and older. LPPP collaborates with EODE to provide case coordination services for lead-poisoned pregnant women.*

*This report reflects DOHMH's ongoing commitment to providing community members, policy makers, and health professionals with information on the health status of New York City residents.*

## **Still a Public Health Problem, Despite Dramatic Progress**

Childhood lead poisoning is a serious but preventable public health problem. In young children, exposure to lead can result in long-lasting neurological damage that may be associated with

learning and behavioral problems, as well as lowered intelligence. Adverse health effects may occur at blood lead levels previously thought to be safe. These health effects may persist long after a child's blood lead level has declined. Preventing exposure to lead, therefore, is the only effective way to protect children against the long-term consequences of lead poisoning.

New York City (NYC) has had tremendous success in reducing both the number of children with lead poisoning and the severity of lead poisonings.<sup>1</sup> Despite this success, childhood lead poisoning remains a serious public health problem in NYC.

### In 2005,

- 3,190 NYC children less than 18 years of age were newly identified with blood lead levels greater than or equal to 10 µg/dL — an 85% decrease since 1995.<sup>2</sup>
- 14 children less than 18 years of age were newly identified with severe lead poisoning, (BLLs ≥ 45 µg/dL) as compared with 82 children in 1995 — an 83% decline.

### Strong Lead Poisoning Prevention Policies

NYC has a strong policy and programmatic infrastructure to support lead poisoning prevention. Local laws and regulations, including Local Law 1 of 2004 and the NYC Health Code, are designed to prevent exposure to lead in housing and in group day care facilities, as well as to limit exposure from consumer products containing lead. New York State laws require blood lead testing and reporting.

NYC has developed a comprehensive plan to eliminate childhood lead poisoning by 2010 (the national goal). The plan targets communities and populations where lead poisoning persists, and is

implemented in collaboration with government and non-government partners in health and housing, with the support of the affected communities. Take Care New York, the citywide health policy launched by DOHMH in 2004, includes childhood lead poisoning, further emphasizing the agency's commitment to eliminating childhood lead poisoning as a health problem.

### Early Identification Through Blood Lead Testing

Early identification of lead-poisoned children through blood lead testing is essential to lead poisoning prevention. Blood lead testing is particularly important for children less than 3 years old, the age group at greatest risk for lead poisoning. In New York State (NYS), blood lead testing is required for all children at both 1 and 2 years of age. NYS also requires that health care providers annually assess all children 6 months to less than 6 years of age for risk of lead exposure. Those children found to be at risk should then be tested.

### In 2005,

- 72% of 1-year-olds and 60% of 2-year-olds were tested in NYC.
- An estimated 88% of NYC children born in 2002 were tested for lead at least once before their third birthday. Only 37% had been tested at both ages 1 and 2.

### Important Definitions in This Report

**Blood Lead Level (BLL)** is the concentration of lead in blood, measured in micrograms per deciliter (µg/dL).

**Elevated Blood Lead Level (EBLL)** is the term used by the U.S. Centers for Disease Control and Prevention (CDC) to describe a BLL ≥10 µg/dL.

**Environmental Intervention Blood Lead Level (EIBLL)** is the term used by the NYC Department of Health and Mental Hygiene (DOHMH) to refer to the BLL at which care coordination and environmental intervention for lead-poisoned children are initiated. In August 2004 the EIBLL was reduced to a BLL ≥15 µg/dL.<sup>3</sup>

## Profile of NYC Lead-Poisoned Children

Although lead poisoning can affect children of all ages, races, and income groups, certain populations are at greater risk for lead poisoning. These groups include children less than 3 years of age; low-income children living in older, deteriorated housing; and black, Hispanic and Asian children. In addition, NYC children born outside the United States (U.S.) are overrepresented among lead-poisoned children. In 2005 the largest numbers of foreign-born children with lead poisoning were from Haiti, Mexico, Bangladesh, Pakistan, and China.

**In 2005**, 875 children were newly identified with Environmental Intervention Blood Lead Levels (EIBLLs) — a 49% decline since 1995. The EIBLL is the level at which DOHMH provides case coordination services and environmental intervention.

Of these children:

- 86% lived in homes built before 1950.
- About half lived in just 9 of 42 NYC neighborhoods.<sup>4,5</sup>
- 44% lived in Brooklyn.
- 58% were less than 3 years old.
- 86% were less than 6 years old.
- 89% were black, Asian, or Hispanic.
- 20% were foreign-born.
- 77% had lead-based paint hazards found on inspection of their homes or supplementary addresses, such as the home of a babysitter.

## Childhood Lead Poisoning Prevention Program

The LPPP has developed a proactive, comprehensive approach to the prevention and control of childhood lead poisoning. The main program areas include:

- Reduction of lead sources in homes and communities.

- Outreach and education to the public and health care providers.
- Case coordination for lead-poisoned children, and lead-poisoned pregnant women and their newborns.
- Environmental inspection and enforcement.

Hazard reduction and educational activities are targeted to communities and populations at greatest risk. The LPPP also collaborates with its technical advisory committee, community-based organizations, social service providers, government agencies, and other groups to increase resources and expertise devoted to lead poisoning prevention. The LPPP works closely with organizations serving high-risk populations to develop interventions designed specifically for their communities.

**In 2005**, LPPP:

- Implemented primary prevention initiatives in high-risk neighborhoods to address lead-based paint hazards in the homes of newborns and young children, before lead poisoning occurs.
- Funded the abatement of lead paint hazards, including the replacement of residential windows and doors, focusing on an area of Brooklyn where children are at high risk for lead poisoning.
- Intensified its education and community outreach efforts with a particular focus on Mexican and South Asian communities at high risk for lead poisoning.
- Collaborated with 17 Medicaid Managed Care Organizations (MMCOs) and the DOHMH Early Intervention Program (EIP) to increase testing among high-risk children.
- Continued to partner with the NYC Department of Housing Preservation and Development (HPD) on a federally funded project that provides financial support for lead hazard repair in high-risk areas.

# Chapter 1: Childhood Lead Poisoning in NYC: Dramatic Progress and Continuing Challenges

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*Childhood lead poisoning is a serious but preventable public health problem. In young children, exposure to lead can result in long-lasting neurological damage that may be associated with learning and behavioral problems, as well as lowered intelligence. Dramatic progress has been made in reducing the number of children with elevated blood lead levels. To continue this progress and reach the national goal of eliminating childhood lead poisoning by 2010, NYC is intensifying its lead poisoning prevention efforts, collaborating with new partners, and building on NYC's already substantial infrastructure of policies and programs to protect children from exposure to lead.*

## Significant Progress Over the Past Decade

The Lead Poisoning Prevention Program (LPPP) of the New York City Department of Health and Mental Hygiene (DOHMH) was established in 1970. The LPPP's mission is to prevent childhood lead poisoning, promote blood lead testing, and provide intervention services for lead-poisoned children and their families.

### Fewer Lead-Poisoned Children

The LPPP provides services to children less than 18 years of age who are identified with lead poisoning. The NYC Health Code defines lead poisoning as a blood lead level (BLL) greater than or equal to 10 micrograms of lead per deciliter of blood ( $\geq 10 \mu\text{g}/\text{dL}$ ).

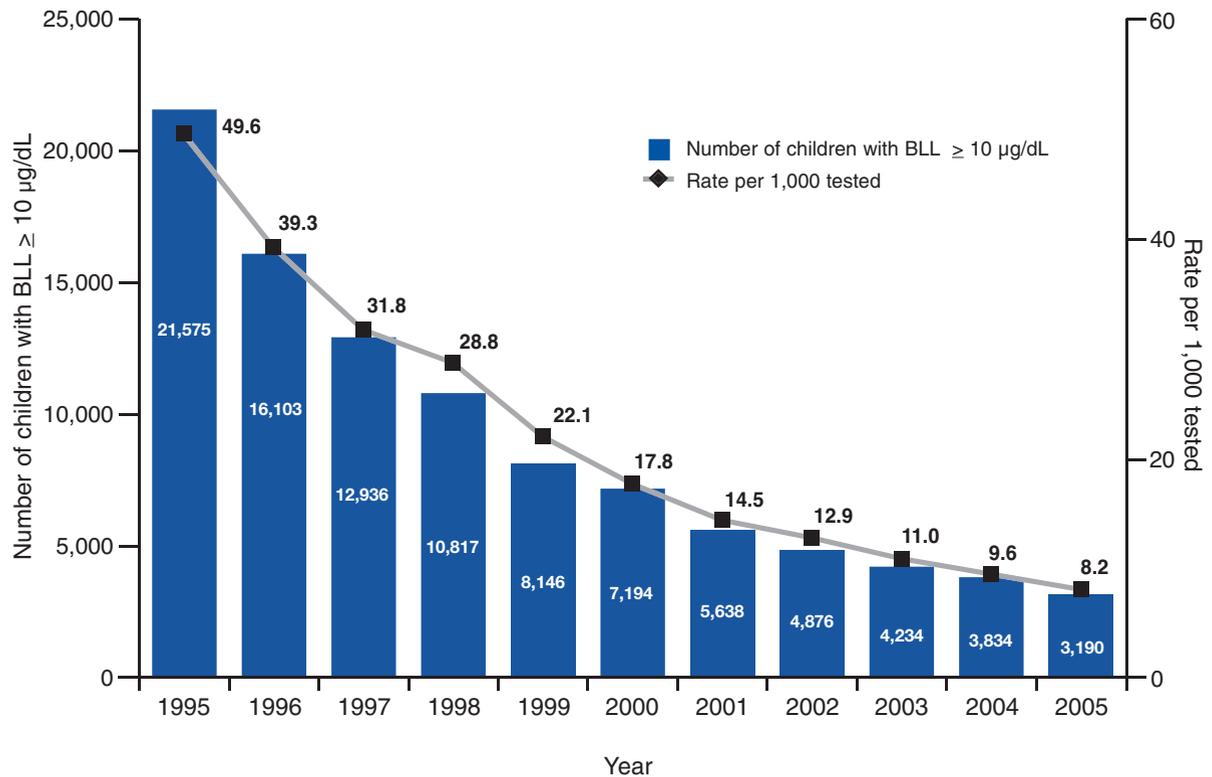
### In 2005,

- 3,190 children less than 18 years of age were newly identified with a BLL  $\geq 10 \mu\text{g}/\text{dL}$ , as compared with 21,575 children in 1995 — an 85% decrease (Figure 1).
- 2,644 children from 6 months to less than 6 years of age were newly identified with a BLL  $\geq 10 \mu\text{g}/\text{dL}$ , as compared with 19,232 children in 1995 — an 86% decrease.

### Fewer Children With Severe Lead Poisoning

Today, the vast majority of children with elevated BLLs have no clinical symptoms. Very few have BLLs  $\geq 45 \mu\text{g}/\text{dL}$ , the blood lead level that

**Figure 1**  
Steady Decline in Number of Lead-Poisoned Children\*



\* Number and rate (per 1,000 tested) of children, age 0 to less than 18 years, newly identified with blood lead levels  $\geq 10$   $\mu\text{g}/\text{dL}$ , by year: NYC, 1995–2005.

requires immediate medical intervention and may require hospitalization for chelation. Chelation is a medical treatment that removes lead from the body.

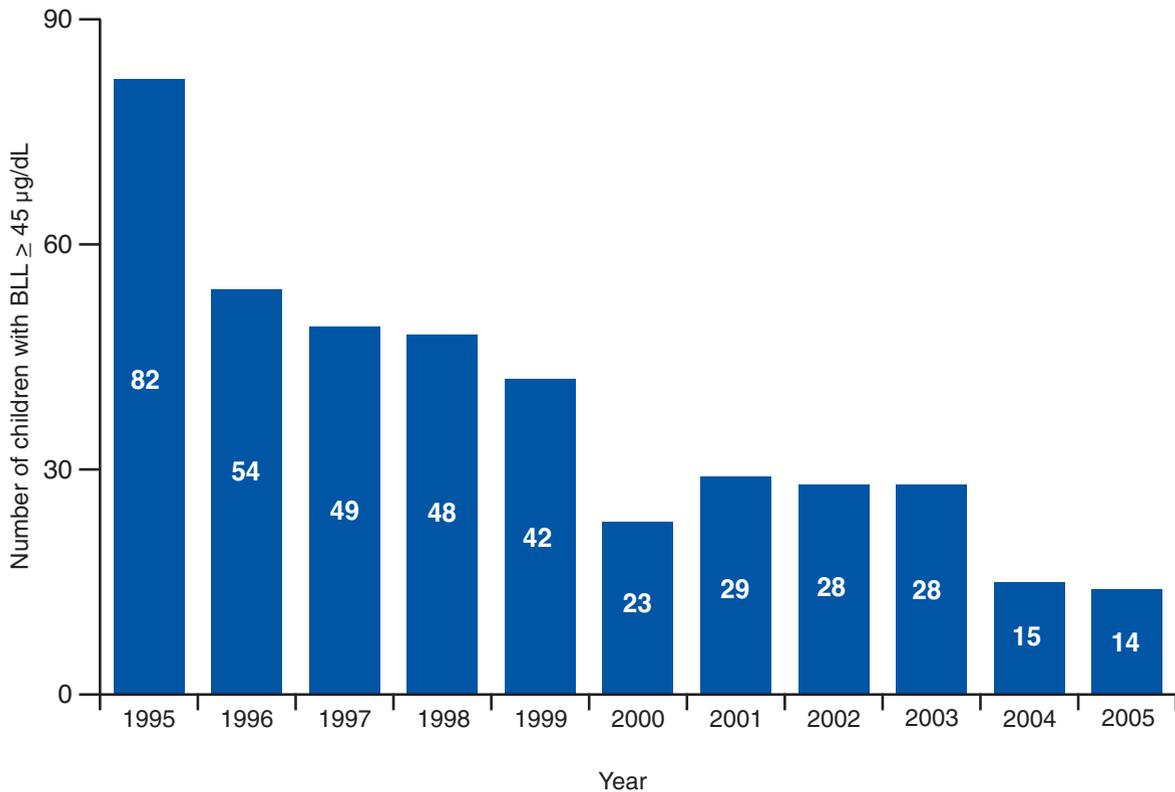
**In 2005,**

- 14 children less than 18 years of age were newly identified with BLLs  $\geq 45$   $\mu\text{g}/\text{dL}$ ,

as compared with 82 children in 1995 — an 83% decline (Figure 2).

- 7 children were newly identified with BLLs  $\geq 60$   $\mu\text{g}/\text{dL}$ , as compared with 25 in 1995 and 2,649 in 1970.

**Figure 2**  
Fewer Severe Cases of Childhood Lead Poisoning\*



\* Number of children, ages 0 to less than 18 years, newly identified with blood lead levels  $\geq$  45  $\mu\text{g/dL}$ , by year: NYC, 1995–2005.

## National Decline in Childhood Lead Poisoning

The dramatic reduction in the number of lead-poisoned children in NYC is part of a larger nationwide decline over the last three decades. The National Health and Nutrition Examination Survey (NHANES) found that fewer than 2% of U.S. children, from 1 year to less than 6 years of age, had BLLs  $\geq$  10  $\mu\text{g/dL}$  in 1999–2000, in contrast with 88% of children in the same age group in 1976.

This progress in reducing childhood lead poisoning can largely be attributed to national and local government regulations that:

- Prohibit the use of lead in gasoline, paint, and other consumer products.
- Require the remediation of lead-based paint hazards in housing, using safe work practices.
- Promote early identification of children with elevated BLLs through blood lead testing.

## NYC Policies Protect Children From Lead Exposure

NYC has developed strong policies to support lead poisoning prevention efforts. NYC was at the forefront of prevention efforts when, in 1960, it banned the use of lead-based paint in homes, 18 years before the federal ban. Laws and regulations have been developed to (1) prevent exposure to lead before children are poisoned; and (2) protect children with elevated BLLs from further exposure. Because lead-based paint and dust continue to be the primary sources of lead exposure for NYC children, policies emphasize lead hazard control in housing, with a focus on young children.

### Local Law 1

In 2004, Local Law 1, the Childhood Lead Poisoning Prevention Act, was enacted. The law requires owners of multiple dwellings (buildings with 3 or more units) to annually identify and fix lead-based paint hazards in every apartment occupied by a child less than 7 years of age. The law applies to buildings built before 1960, and between 1960 and 1978 if it is known that the building contains lead paint. The New York City Department of Housing Preservation and Development is primarily responsible for enforcement of Local Law 1.

Local Law 1 also requires group day care operators to visually survey their facilities for

peeling paint and other lead-based paint hazards at least once a year. Identified lead paint hazards must be repaired immediately, using safe work practices. Group day care operators must update this survey annually and make repairs when conditions, such as water leaks or other damages, cause paint to deteriorate during the year. The results of this survey must be submitted to the DOHMH.

### New York City Health Code

Based on provisions in the NYC Health Code, DOHMH investigates lead hazards in the homes and supplemental addresses of lead-poisoned children, and orders building owners to abate any identified lead-based paint hazards. Building owners are required to use safe work practices when abating lead-based paint hazards. The Health Code also bans the use of lead-based paint inside homes, and on toys, furniture, or other items used by children.

### Local Law 49

In 2005, NYC adopted Local Law 49, which prohibits the sale of *Litargirio* and any candy products that contain lead. *Litargirio* is a lead-containing powder imported from the Dominican Republic and sold in local botanicas (retail stores

### Lead-Based Paint and Dust: A Health Hazard for Children

Homes built before the 1960 ban on lead-based paint may still contain lead in older layers of paint. These older paint layers can become a hazard if the paint chips, flakes, or peels, releasing lead-containing dust. This dust can contaminate floors, windowsills, and children's hands, toys, and bottles. Young children who crawl on the floor and put things in their mouths are at greatest risk for lead poisoning through ingestion of lead dust.

Aging paint can release dust when routine maintenance is neglected or when friction on windows or doors abrades painted surfaces. Repair and renovation work conducted without appropriate dust controls can also contaminate an apartment with lead.

specializing in herbal medicines, cultural and spiritual items). *Litargirio* is used as an antiperspirant/deodorant, fungicide (foot powder), and burn treatment.

## Comprehensive Plan to Eliminate Lead Poisoning

The U.S. Department of Health and Human Services has set a national goal to eliminate childhood lead poisoning by 2010. Elimination is defined as “no children less than 6 years of age newly identified with BLLs  $\geq 10 \mu\text{g/dL}$ ”. To meet this goal, LPPP has developed a comprehensive plan with the assistance of a technical advisory committee. The activities in the plan are designed to:

- Prevent exposure to lead-based paint.
- Prevent exposure to non-paint sources of lead.
- Increase blood lead testing of young children.

To achieve these goals, the plan targets outreach, education, and environmental intervention activities in neighborhoods and populations that are at the greatest risk of lead poisoning. A copy of the plan is available at <http://www.nyc.gov/lead>.

## Take Care New York

Take Care New York (TCNY) is the comprehensive citywide health policy launched by DOHMH in 2004. Childhood lead poisoning is included in the TCNY agenda, as part of the step to “Make Your Home Safe and Healthy.” Inclusion in the TCNY initiative underscores the DOHMH’s commitment to eliminating childhood lead poisoning in NYC.

### Take Care New York: 10 Steps to a Longer and Healthier Life

1. Have a Regular Doctor or Other Health Care Provider
2. Be Tobacco Free
3. Keep Your Heart Healthy
4. Know Your HIV Status
5. Get Help for Depression
6. Live Free of Dependence on Alcohol and Drugs
7. Get Checked for Cancer
8. Get the Immunizations You Need
- 9. Make Your Home Safe and Healthy:**  
*Have a home that is free from violence and free from lead-based paint hazards.*
10. Have a Healthy Baby

## Future Challenges

### Populations at Risk

While the number of children in NYC with elevated BLLs has decreased, childhood lead poisoning remains a significant problem in some NYC communities. Low-income children living in older, deteriorated housing, and black, Hispanic and Asian children, are particularly at risk. In addition, children born outside the U.S. are overrepresented among children with Environmental Intervention Blood Lead Levels (EIBLLs). Most of the foreign-born children with EIBLLs identified since 2002 were born in five countries: Haiti, Mexico, Pakistan, Bangladesh, and Dominican Republic. In addition, an increase in EIBLLs among children born in China has recently been observed.

### Consequences of Low BLLs

While severe cases of lead poisoning are now infrequent, recent research shows that blood lead

levels once considered safe may affect children's growth and development. These effects may go undetected until the child enters school, at which time the effects of lead poisoning may be reflected in poor academic performance and behavior problems.

### Prenatal Exposure

A pregnant woman with an elevated blood lead level passes the lead in her blood to the fetus. Research suggests that children born with elevated blood lead levels have an increased risk of cognitive problems and developmental delays. During pregnancy, maternal bone stores of calcium are released into the bloodstream to support development of the fetal bone structure. When this happens, bone stores of lead from past exposure may be released as well. A pregnant woman's elevated BLL may, therefore, reflect past exposure, recent exposure, or both.

## Chapter 2: Childhood Lead Poisoning in New York City in 2005

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*While lead poisoning can affect children of all ages, races, and income groups, certain populations are at greater risk for lead poisoning. These populations include young children living in older, deteriorated housing in low-income neighborhoods, and black, Hispanic and Asian children.*

*This chapter presents data on childhood lead poisoning and blood lead testing in NYC. Since the Lead Poisoning Prevention Program (LPPP) provides services to lead-poisoned children less than 18 years of age, data presented in this report, except where specified, refer to children less than 18 years of age. However, the age group at greatest risk for lead poisoning includes children 6 months to less than 6 years of age, especially those between the ages of 1 and 3 years.*

While NYC has made great progress in reducing childhood lead poisoning, the profile of lead-poisoned children underscores the need for continued prevention efforts. In addition, NYC's extensive older, deteriorated housing stock, concentrated in low-income neighborhoods, is a primary source of lead exposure for children.<sup>4</sup> More than 67% of housing units in NYC were built before 1960, the year lead-based paint was banned for use inside NYC homes.

### Blood Lead Testing

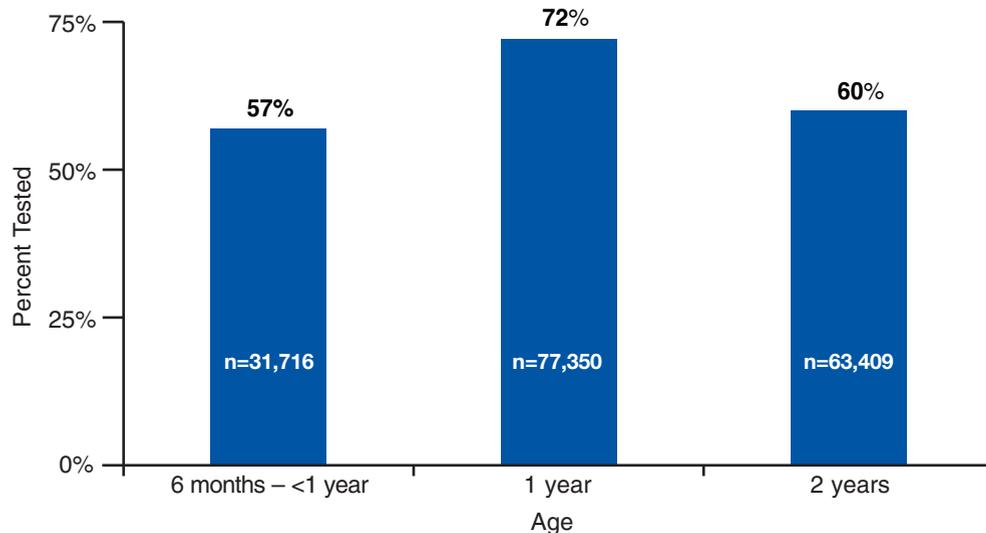
Most children with elevated blood lead levels have no symptoms. Blood lead testing is the standard method for identifying these children. Blood lead testing is particularly important for

children less than 3 years old, the group at greatest risk for lead poisoning. In NYS, blood lead testing is required for all 1-year-old and 2-year-old children, and for high-risk children from 6 months to less than 6 years of age. Information obtained from blood lead tests is also used to identify high-risk communities and populations and to target lead poisoning prevention activities.

#### **In 2005,**

- 72% of 1-year-olds and 60% of 2-year-olds were tested (Figure 3).
- An estimated 88% of children born in 2002 were tested for lead poisoning at least once before their third birthday. Only 37% had been tested at both ages 1 and 2 as required by NYS law.

**Figure 3**  
More Than Half of 1-Year-Old and 2-Year-Old Children in New York City Were Tested for Lead Poisoning\*



\* Number and percent of children, ages 6 months to less than 3 years, tested for lead poisoning, by age: NYC, 2005. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

Testing rates for 1-year-olds and 2-year-olds were the same in 2005 as they were in 2004, maintaining the increase in testing rate seen between 2003 and 2004.

**In 2005**, testing rates for 1- and 2-year-old children showed significant geographic variation:

- Across boroughs, ranging from 56% in Staten Island, to 74% in Manhattan (Figure 4).
- Among neighborhoods, ranging from 50% in South Beach-Tottenville, Staten Island, to 83% in Chelsea-Clinton, Manhattan (Figure 5).

### Environmental Intervention Blood Lead Levels (EIBLLs)

The LPPP provides environmental intervention and case coordination services for

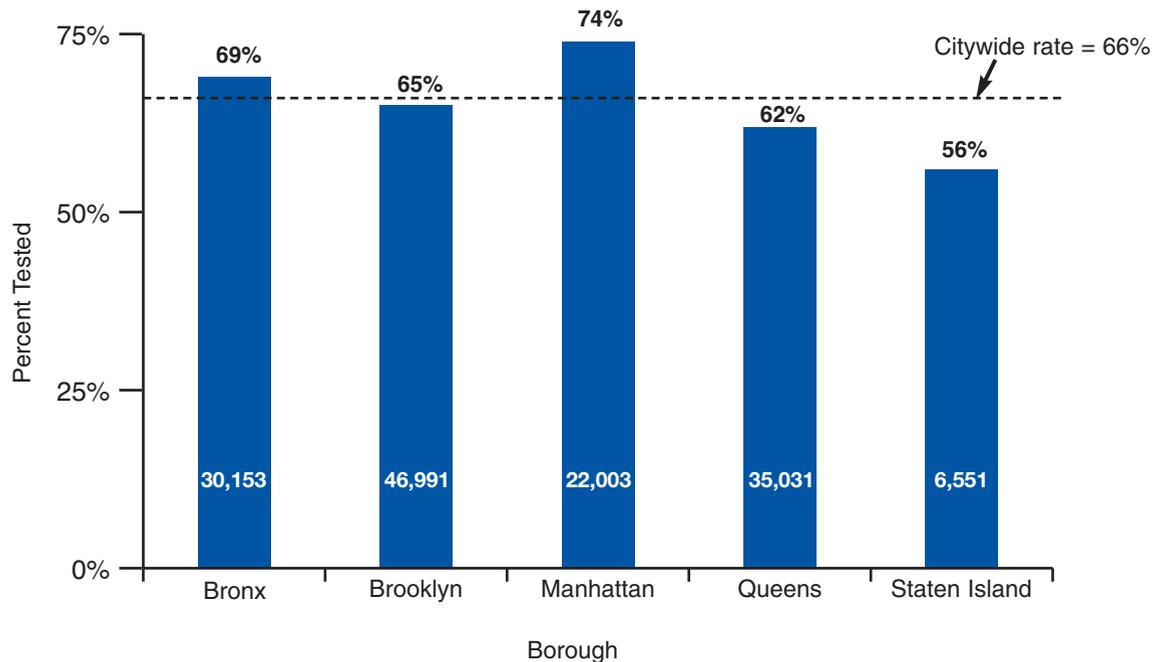
children with blood lead levels at or above 15  $\mu\text{g}/\text{dL}$ , the current environmental intervention blood lead level (EIBLL).

**In 2005**,

- 875 children less than 18 years old were identified with an EIBLL — a 49% decline since 1995 (Figure 6).
- 728 children 6 months to less than 6 years old were identified with an EIBLL — a 54% decline since 1995.

Guided by recommendations from CDC, DOHMH has reduced the EIBLL 6 times since it was first set at 60  $\mu\text{g}/\text{dL}$  in 1970. Between 1999 and 2004, environmental investigation was undertaken for children with one blood lead level  $\geq 20 \mu\text{g}/\text{dL}$  or two blood lead levels of 15–19  $\mu\text{g}/\text{dL}$ , taken at least 3 months apart. In August 2004, the EIBLL was reduced to one blood

**Figure 4**  
Percent of Children Tested for Lead Poisoning Varied by Borough\*



\* Percent of children, ages 1 year to less than 3 years, tested for lead poisoning, by borough: NYC, 2005. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

lead level  $\geq 15 \mu\text{g}/\text{dL}$ . This lowered threshold for environmental intervention resulted in an increase in the number of children who received intervention services in 2004 and 2005. The increased number of EIBLL cases does not reflect a rise in the number of children with elevated blood lead levels. This is illustrated by examining the downward trend in the number and rate of children with blood lead levels of  $20 \mu\text{g}/\text{dL}$  or greater, a blood lead range that has been included in the definition of EIBLL since 1993.

**In 2005,**

- 340 children less than 18 years old were newly identified with a BLL  $\geq 20 \mu\text{g}/\text{dL}$ , an 80% decline compared with 1,709 children in

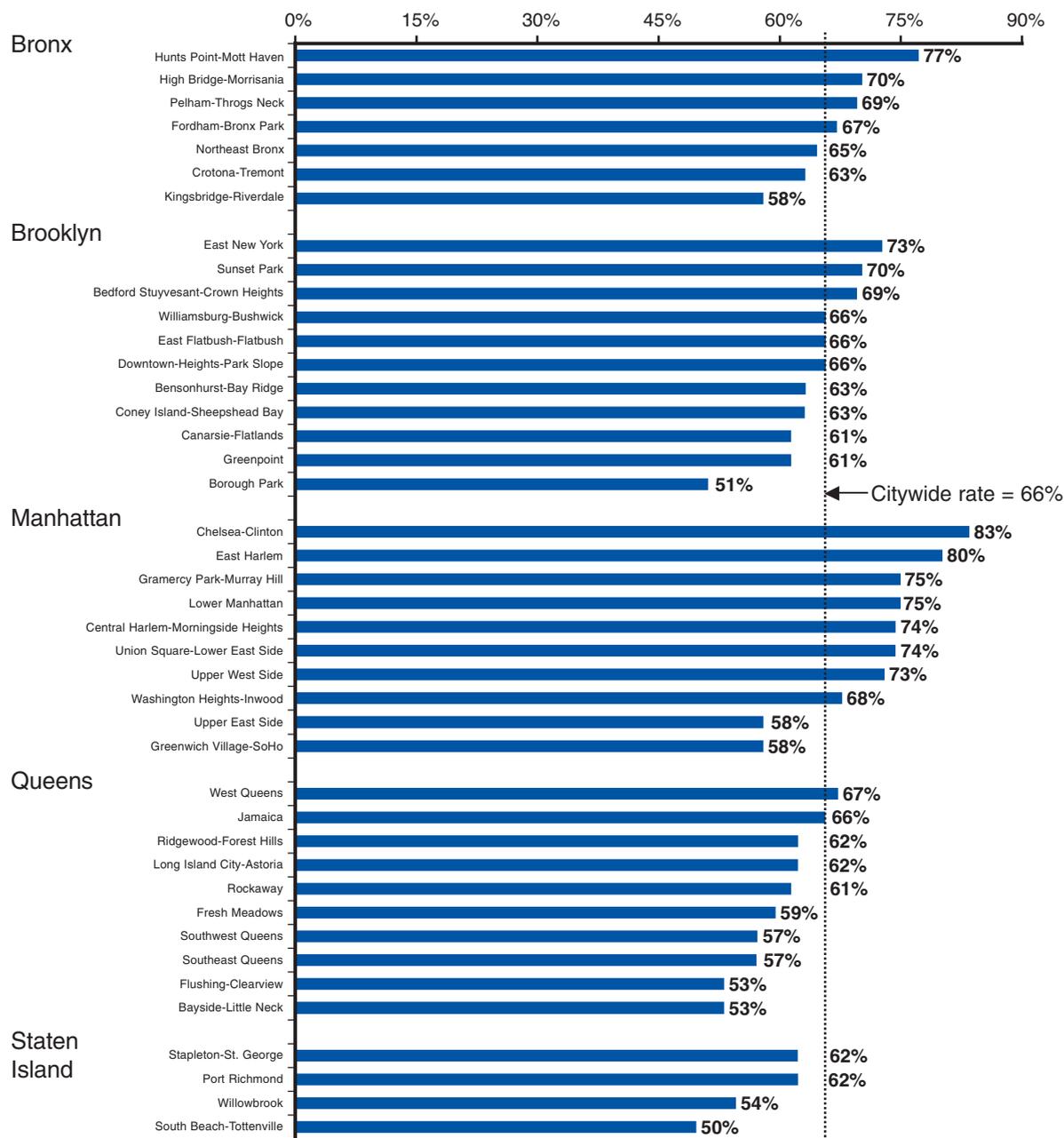
1995, and a 16% decline compared with 406 children identified in 2004.

- 284 children 6 months to less than 6 years old were newly identified with a BLL  $\geq 20 \mu\text{g}/\text{dL}$ , an 82% decline compared with 1,578 children in 1995, and a 20% decline when compared with 354 children who were newly identified in 2004 (Figure 6).

**Old Housing**

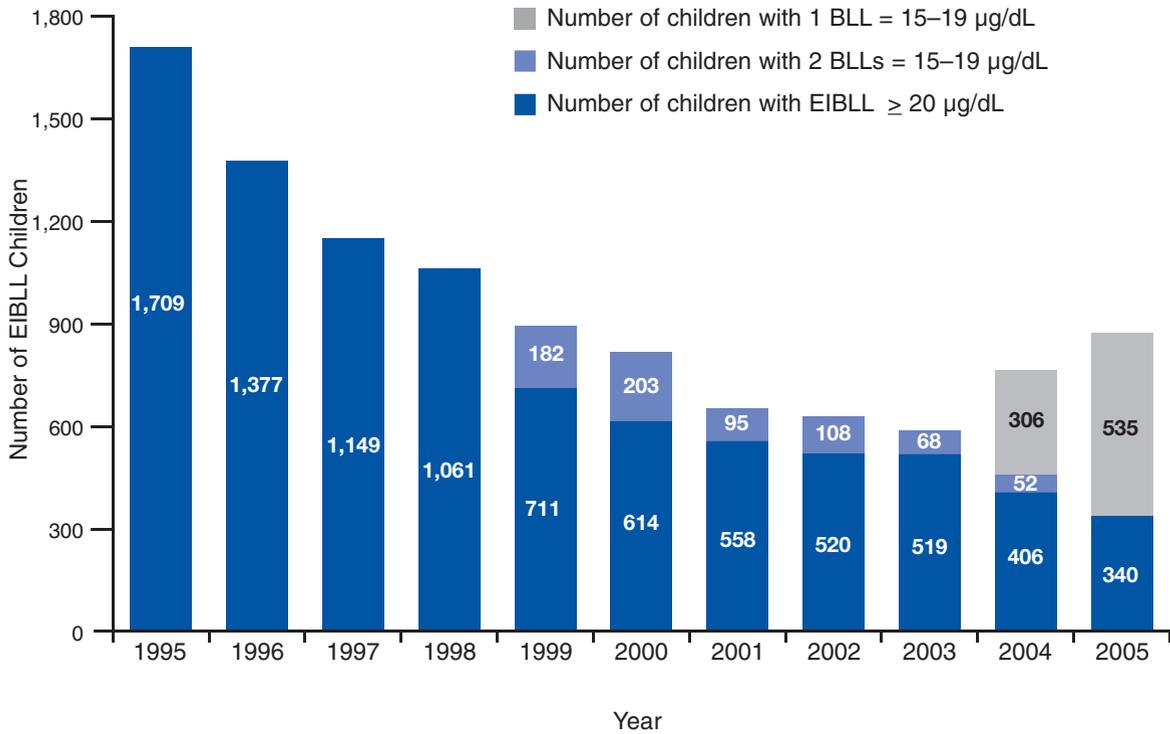
The main source of childhood lead poisoning in NYC, as in most regions of the U.S., is lead-based paint in older, deteriorated housing. Nationwide, lead poisoning is associated with housing constructed before 1950, when lead-based

**Figure 5**  
Percent of Children Tested for Lead Poisoning Was Higher in Some Neighborhoods\*



\* Percent of children, ages 1 year to less than 3 years, tested for lead poisoning, by United Hospital Fund Neighborhood: NYC, 2005. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

**Figure 6**  
**More Children Received Environmental Intervention Services in 2005\***



\* Number of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by year: NYC, 1995–2005. From July 1999 through July 2004, the Environmental Intervention Blood Lead Level was defined as either (a) one venous blood lead level  $\geq 20$   $\mu\text{g/dL}$ , or (b) two blood lead levels 15–19  $\mu\text{g/dL}$  that were drawn at least 3 months apart, where the second test was a venous test. As of August 2004, the EIBLL is defined as one venous blood lead level  $\geq 15$   $\mu\text{g/dL}$ .

paint was widely used and generally contained more lead than in later decades. More than 50% of NYC housing stock was built before 1950, compared with about 22% of all U.S. housing.

**In 2005,**

- 86% of children less than 18 years old, newly identified with EIBLLs, lived in dwellings built before 1950 (Table 2).

- 88% of children, 6 months to less than 6 years old, newly identified with EIBLLs, lived in dwellings built before 1950 (Table 2).

**In 2005,** LPPP inspectors found peeling or deteriorated lead-based paint in the homes or supplementary addresses (such as the home of a babysitter) of:

- 77% of children, less than 18 years, newly identified with EIBLLs (Table 2).

- 79% of children, 6 months to less than 6 years, newly identified with EIBLLs (Table 2).

## Poverty

Poverty contributes to the risk of lead poisoning for children. Because poverty restricts a family's housing choices, low-income families often reside in older, poorly maintained housing. Nationally, among children 1 to 5 years of age living in older housing, those in low-income families were four times more likely to have elevated blood lead levels than children in middle-income families. Information on family income for lead-poisoned children in NYC is not available. However, lead poisoning in NYC continues to be concentrated in neighborhoods that have large low-income populations.

In NYC, 30% of all children less than 18 years live in poverty, as compared with 17% of all U.S. children.

### In 2005,

- More than half of the children less than 18 years old who were newly identified with BLLs  $\geq 10$   $\mu\text{g/dL}$  lived in just 8 of 42 NYC neighborhoods (Table 3). In these neighborhoods, 35% of children live in poverty.<sup>6</sup>
- More than half of the children less than 18 years old who were newly identified with EIBLLs lived in just 9 of 42 NYC neighborhoods (Table 3). In these neighborhoods, 33% of children live in poverty.<sup>5</sup>

The map in Figure 7 highlights in dark blue the neighborhoods with the highest EIBLL case rates. Most of these are low-income communities. By contrast, the neighborhoods with the lowest EIBLL case rates, highlighted in light blue and white, are generally middle- to upper-income communities.

## Neighborhood

The disproportionate burden of lead poisoning in certain neighborhoods is evident when rates of elevated blood lead levels and EIBLLs in each community of NYC are compared to the citywide average.

**In 2005**, for children, less than 18 years, newly identified with BLLs  $\geq 10$   $\mu\text{g/dL}$ :

- The citywide rate was 8.2 for every 1,000 children tested.
- The rate was higher than the citywide average in 19 of 42 neighborhoods: 8 neighborhoods in Brooklyn, 6 in Manhattan, 2 in the Bronx, 2 in Queens, and 1 on Staten Island (Figure 8 and Table 3).

**In 2005**, for children, less than 18 years, newly identified with EIBLLs:

- The citywide rate was 2.2 for every 1,000 children tested.
- The rate was higher than the citywide average in 15 of 42 neighborhoods: 8 neighborhoods in Brooklyn, 5 in Queens, and 2 on Staten Island (Figure 9 and Table 3).

## Borough

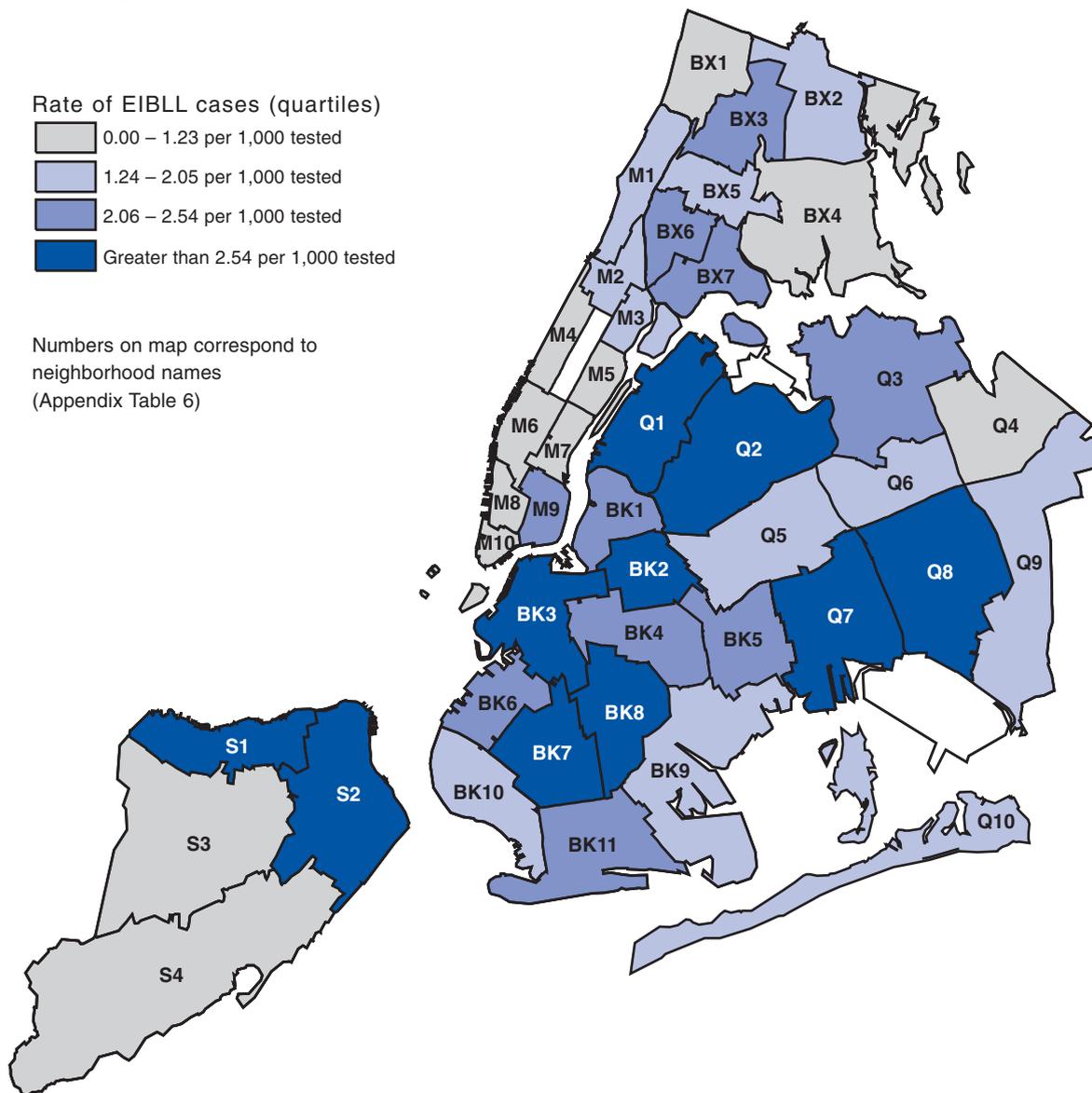
Brooklyn children are disproportionately affected by lead poisoning. About 34% of NYC children less than 18 years old reside in Brooklyn, but the proportion of lead-poisoned children from that borough is considerably higher (Figure 10).

**In 2005**,

- 40% of children less than 18 years old newly identified with BLLs  $\geq 10$   $\mu\text{g/dL}$  lived in Brooklyn (Table 3).
- 44% of children less than 18 years old newly identified with EIBLLs resided in Brooklyn (Figure 10 and Table 3).

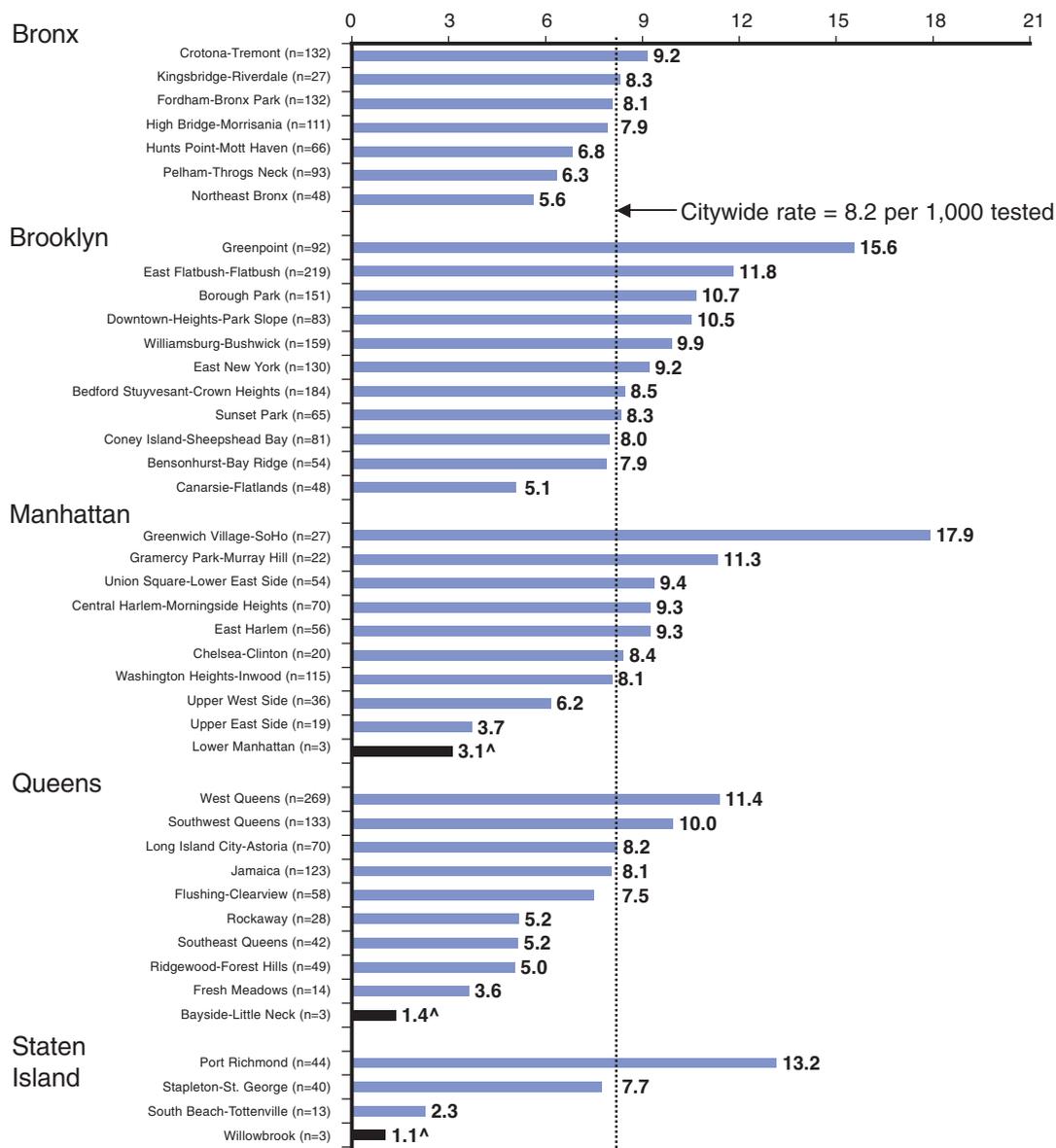
Queens accounted for approximately a quarter of children with EIBLLs, which is similar to the

**Figure 7**  
 Environmental Intervention Blood Lead Level (EIBLL) Case Rates Varied  
 By Neighborhood\*



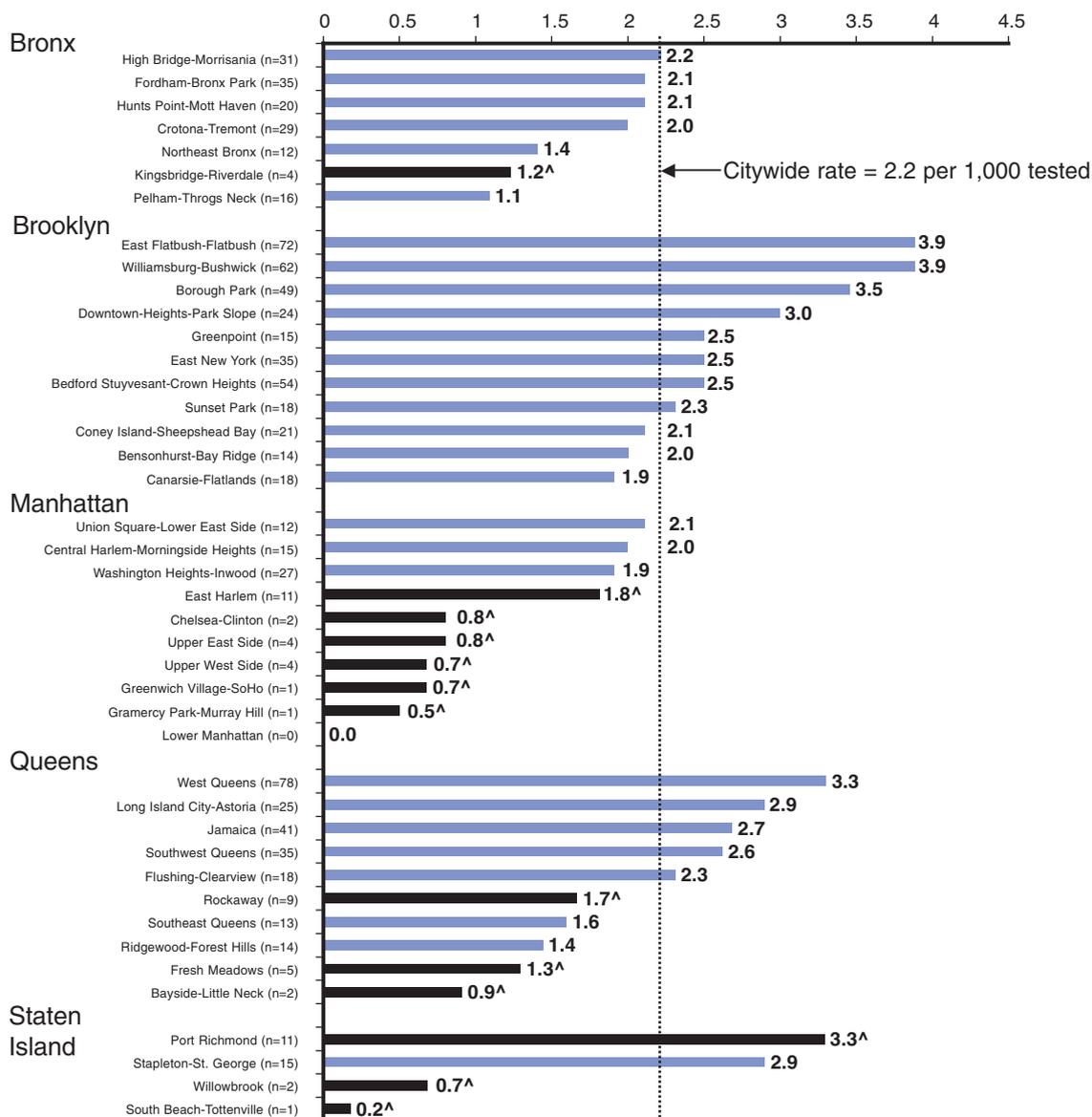
\* Rates of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level (EIBLL): NYC, 2005. From July 1999 through July 2004, the EIBLL was defined as either (a) at least one venous blood lead level  $\geq 20 \mu\text{g/dL}$ ; or (b) two blood lead levels 15–19  $\mu\text{g/dL}$  that were drawn at least 3 months apart, where the second test was a venous test. As of August 2004, the EIBLL is defined as one venous blood lead level  $\geq 15 \mu\text{g/dL}$ .

**Figure 8**  
**Rates of Children With Elevated Blood Lead Levels Were Higher in Some Neighborhoods\***



\* Number and rate (per 1,000 children tested) of children, ages 0 to less than 18 years, newly identified with an Elevated Blood Lead Level ( $\geq 10 \mu\text{g/dL}$ ), by United Hospital Fund Neighborhood (sorted highest to lowest within each borough): NYC, 2005.  
<sup>A</sup> Elevated Blood Lead Level rates in neighborhoods represented by black bars were less precise (relative standard error  $\geq 30\%$ ) due to small numbers of children with elevated BLL. Caution should be used in interpreting these case rates.  
 Note: Number of cases with EBLL in each neighborhood is reported in parentheses to the right of neighborhood name.

**Figure 9**  
**Environmental Intervention Blood Lead Level (EIBLL) Case Rates Were Higher in Some Neighborhoods\***



\* Number and rate (per 1,000 children tested) of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by United Hospital Fund Neighborhood (sorted highest to lowest within each borough): NYC, 2005.

<sup>^</sup> Case rates in neighborhoods represented by black bars were less precise (relative standard error  $\geq 30\%$ ) due to small numbers of cases. Caution should be used in interpreting these case rates.

Note: Number of cases with EIBLL in each neighborhood is reported in parentheses to the right of neighborhood name.

proportion of NYC children living in the borough. Children from the Bronx, Manhattan, and Staten Island made up the remaining 29% of children with EIBLLs.

### Age

Young children, especially those less than 3 years of age, are at greatest risk for lead poisoning. They are more likely to ingest lead-based paint or lead dust because they crawl around on floors and put their hands and toys in their mouths. Lead is also more readily absorbed in the gastrointestinal tract of young children. Research suggests that children less than 2 years of age may be particularly vulnerable to the neurotoxic effects of lead because of their rapidly developing neurological systems.

### In 2005,

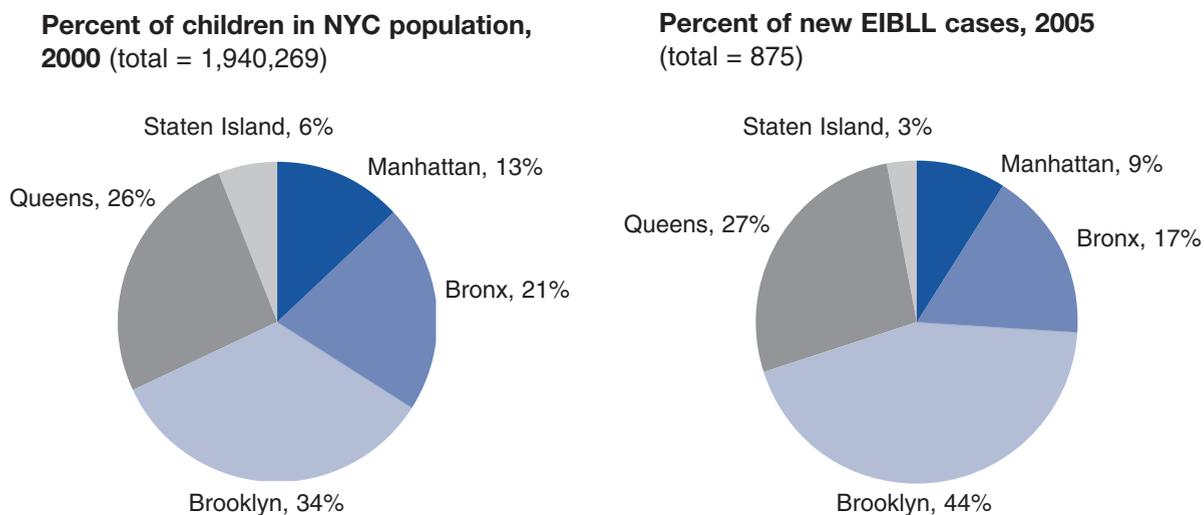
- Among the 3,190 children newly identified with BLL  $\geq$  10  $\mu\text{g}/\text{dL}$ , 57% (1,831) were less than 3 years old and another 27% (874) were 3 to less than 6 years of age.
- Among the 875 children newly identified with EIBLLs, 58% (511 children) were less than 3 years old, and another 27% (240 children) were 3 to less than 6 years of age (Table 2).

### Gender

The children newly identified with EIBLLs are generally evenly divided by gender, with slightly more males than females. In 2005, the proportion of male children with EIBLLs, who were under age 18, was 53% (Table 2).

**Figure 10**

Brooklyn Children Continue To Be Overrepresented in the Environmental Intervention Blood Lead Level (EIBLL) Group\*



\* Distribution of children, ages 0 to less than 18 years, in the population, and distribution of children newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by borough: New York City, 2005. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

### Race/Ethnicity

As in most parts of the U.S., lead poisoning in NYC disproportionately affects black, Hispanic and Asian children (Figure 11 and Table 2). This disparity is determined by comparing the race/ethnicity of children with EIBLLs with the racial/ethnic composition of NYC’s population overall.

The racial/ethnic distribution of children with EIBLLs varies from year to year. In 2005, Hispanic race/ethnicity was reported more often for children newly identified with EIBLLs than in previous years. However, since 1995, the race/ethnicity most frequently reported for children with EIBLLs, has been black, non-Hispanic. The LPPP will continue to monitor the race/ethnicity distribution among children with EIBLLs to identify any new trends.

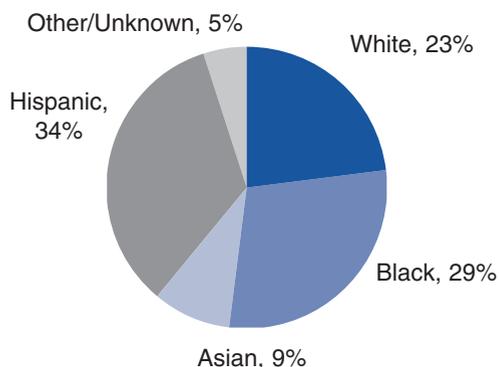
### In 2005,

- Hispanic children represented the largest racial/ethnic group among the EIBLL cases. Approximately 40% of children with EIBLLs were Hispanic, while 34% of NYC children were Hispanic.
- Black, non-Hispanic children accounted for 31% of EIBLL cases and 29% of all NYC children.
- Asian, non-Hispanic children made up 18% of EIBLL cases, but only 9% of NYC children as a whole.
- White, non-Hispanic children represented only 9% of EIBLL cases, although 23% of NYC children were white, non-Hispanic.

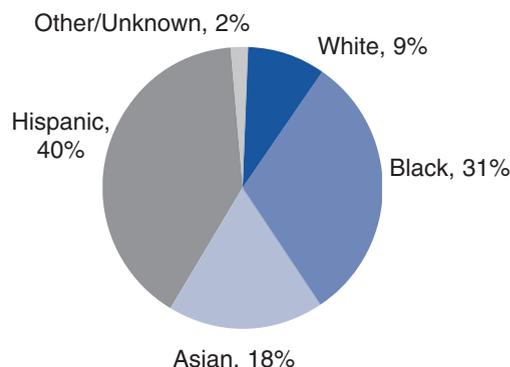
**Figure 11**

Hispanic Children Were Overrepresented in the Environmental Intervention Blood Lead Level (EIBLL) Group\*

**Percent of children in NYC population, 2000** (total = 1,940,269)



**Percent of new EIBLL cases, 2005** (total = 875)



\* Distribution of children, ages 0 to less than 18 years, in the population, and distribution of children newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by race/ethnicity: New York City, 2005. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

### Country of Birth

In NYC, children born outside the U.S. are overrepresented among children with EIBLLs and were less likely to have lead-based paint hazards in their homes. Sources of lead exposure, other than lead-based paint and dust, include imported pottery, health remedies, cosmetics, food, jewelry, and novelties containing lead. Children, particularly foreign-born children, or those frequently traveling to a foreign country, also may have acquired lead poisoning from exposures outside the U.S.

#### In 2005,

- 20% of the 875 EIBLL cases with a known country of birth were born outside the U.S., while 14% of all NYC children were foreign-born.

- The most frequently reported countries of birth among foreign-born EIBLL cases were Haiti, Mexico, Bangladesh, Pakistan, and China, in decreasing order of number of cases. However, the most frequently reported countries of birth overall for foreign-born New York City children under 6 years are the Dominican Republic, Mexico, Jamaica, China, and Ecuador.

#### In 2005,

- Only 63% of foreign-born children with EIBLLs had lead-based paint hazards in their homes, compared with 81% of US-born children with EIBLLs.

## Chapter 3: Accomplishments of the Lead Poisoning Prevention Program in 2005

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*The Lead Poisoning Prevention Program (LPPP) has developed a proactive, comprehensive approach to childhood lead poisoning prevention and control. Primary areas of activities include:*

- *Lead hazard reduction in homes and communities.*
- *Outreach and education to the public and health care providers to promote prevention and early detection of lead poisoning.*
- *Case coordination for lead-poisoned children, as well as lead-poisoned pregnant women and their newborns.*
- *Environmental investigations and enforcement.*
- *Surveillance and research.*

### Highlights of Prevention Activities

The LPPP targets its intervention efforts to communities and populations at greatest risk. The LPPP works with its technical advisory committee, community-based organizations, social service providers, health care providers, and other government agencies to increase awareness and maximize resources devoted to lead poisoning prevention.

**In 2005, LPPP:**

- Implemented a primary prevention initiative in high-risk neighborhoods to address lead-based paint hazards in the homes of newborns and young children before lead poisoning occurs.
- Contributed funds to abate lead paint hazards, including the replacement of residential windows and doors, focusing on an area in Brooklyn where children are at high risk for lead poisoning.
- Intensified its education and community outreach efforts with a particular focus on high-risk Mexican and South Asian communities.
- Collaborated with 17 Medicaid Managed Care Organizations (MMCOS) and the DOHMH Early Intervention Program (EIP) to increase testing among high-risk children.
- Continued to partner with the NYC Department of Housing Preservation and Development (HPD) on a federally funded project that provides financial support to building owners for lead hazard repair in high-risk areas.
- Mounted a bilingual print media campaign that targeted high risk neighborhoods.

## Safety Procedures for Home Repair and Renovation Work

Lead-based paint is commonly found in NYC housing built before 1960. Repairs and renovation work in homes with lead-based paint may create lead dust hazards. Safe work practices can help reduce the risk of lead poisoning.

For work performed in buildings where young children live, or when a tenant moves out, certain legal requirements may apply, such as using appropriately trained workers and dust clearance testing at the end of the job.

### **Before Work Begins:**

- √ Keep children and pregnant women away from the work area.
- √ Wet clean or HEPA (High Efficiency Particulate Air) vacuum floors, furniture, and draperies. Remove moveable furniture and other items.
- √ Seal off work area by covering floors, vents, doors, windows, and furniture with heavy plastic.

### **During Repair and Renovation Work:**

- √ Use wet methods. Always mist before sanding, scraping, or performing other activities that disturb paint.
- √ Clean up daily by wet mopping (using separate wash and rinse water) and a HEPA vacuum.

### **When Work Is Completed:**

- √ Mist all dust and debris with water and place in double plastic garbage bag.
- √ HEPA vacuum, then wet mop, using separate wash and rinse water.
- √ Dust-clearance tests may be required.
- √ Call 311 for more information.

## Preventing Exposure to Lead-Based Paint

### Making Housing Safer for Children

Reducing lead-based paint hazards in NYC communities is an integral part of LPPP's prevention strategy. Using its authority under the NYC Health Code, LPPP:

#### **Orders Landlords to Correct Lead-Based Paint Hazards**

The LPPP issues violations to landlords, ordering them to correct lead-based paint hazards in homes of children with Environmental Intervention Blood Lead Levels (EIBLLs).

#### **In 2005, LPPP**

- Issued 894 violations for lead-based paint hazards in homes and supplemental addresses.
- Monitored the completion of lead abatement work in 734 homes by order of the Commissioner of Health and Mental Hygiene.

#### **Conducts Lead Hazard Investigations in 1-and 2-Family Homes**

The LPPP responds to complaints about peeling or deteriorated paint from tenants in 1- and 2- family homes, and orders landlords to

repair identified lead-based paint hazards. HPD performs similar functions for tenants in dwellings with 3 or more units.

In 2005, LPPP conducted 134 inspections at 20 dwellings in 1- and 2- family homes.

#### **Enforces Safe Work Practices**

The LPPP enforces health code regulations that require the use of safe work practices during

lead abatement and remediation. Lead-safe work practices include isolation of work area, minimizing dispersion of dust, wet work methods, and daily cleaning. The LPPP sanitarians also investigate complaints of unsafe work which creates potential lead hazards in and around homes of young children.

In 2005, LPPP conducted 3,313 safety inspections for work disturbing lead-based paint.

## **Reducing Lead-Based Paint Hazards in High-Risk Neighborhoods**

The LPPP uses health, housing, and demographic data to target its intervention efforts to communities and populations at greatest risk for lead poisoning. In 2005, LPPP continued to work with HPD and other DOHMH programs to reduce exposure to lead-based paint hazards by:

#### **Targeting High-Risk Buildings**

Lead-based paint hazards are often the result of poor building maintenance. Peeling paint in one apartment often can be an indicator of poor conditions throughout the building. When LPPP inspects the home of a lead-poisoned child and identifies lead-based paint hazards, the building owner is ordered to abate the hazards. The LPPP refers the building to HPD for building-wide action to assess compliance with Local Law 1 and inspects those buildings not in compliance.

In 2005, LPPP referred 806 buildings to HPD for building-wide follow-up actions.

#### **Conducting Home Visits in High-Risk Dwellings**

In July 2005, LPPP implemented a collaboration with the Brooklyn District Public Health Office (DPHO) Newborn Initiative, which provides home visits to new mothers to equip them with information on well baby care and home environmental hazards, including lead-based paint

hazards. When peeling paint is found in a newborn's home, LPPP sanitarians stationed at the Brooklyn DPHO conduct a thorough environmental assessment and issue orders to landlords to correct any identified lead-based paint hazards.

From July through December 2005, the Newborn Initiative referred 57 apartments to LPPP for inspection. Lead-based paint hazards were identified in 32 apartments.

#### **Providing Financial Assistance to Building Owners for Hazard Reduction**

Since 1995, LPPP and HPD have collaborated on a project funded by the U.S. Department of Housing and Urban Development (HUD). The goal of this project is to improve the quality of NYC housing and make housing safer for NYC children. The project provides financial assistance through forgivable loans to building owners for lead hazard reduction. The LPPP is responsible for (1) identifying buildings with a history of lead-based paint hazard violations for recruitment into the project; (2) making home visits to families living in the buildings to provide lead poisoning prevention education; (3) monitoring dust lead levels in apartments undergoing remediation; and (4) monitoring blood lead levels for children less than 7 years of age residing in these apartments.

From 1995 to 2005, more than 1,491 apartments received lead hazard repairs under this project, with 203 apartments treated in 2005. Two new awards were received from HUD that will support continuation of this project.

#### **Eliminating lead-based paint hazards in Bushwick, Brooklyn**

In 2005, the DOHMH contributed \$500,000 in one-time funds to pay for lead-based paint

hazard abatement and repair, including the replacement of residential windows and doors in the Bushwick area of Brooklyn. This project was part of a larger effort with HPD, other city agencies, and a Brooklyn community-based organization to improve living conditions and health in Bushwick.

In 2005, 375 doors and 762 windows in 167 dwelling units were repaired or replaced.

## **Preventing Exposure to Non-Paint Sources of Lead**

Lead-based paint and dust remain the primary sources of lead poisoning among NYC children. However, in 2005, when LPPP inspected the homes and supplementary addresses (such as the home of a babysitter) of children with EIBLLs, inspectors were unable to identify lead-based paint hazards in 23% of the cases. Other, non-paint lead sources may contribute to these elevated blood lead levels.

The LPPP is working to better understand the range of non-paint lead sources in NYC to develop

effective strategies to reduce exposure to these sources.

#### **In 2005, LPPP:**

- Improved its database on non-paint lead sources.
- Provided intensive staff training and education to improve risk assessment for non-paint sources of lead exposure.

### **Other Sources of Childhood Lead Exposure**

- Lead-glazed pottery, food, spices, health remedies, cosmetics, and other products contaminated with lead.
- Living in or traveling to foreign countries where lead contamination persists from gasoline, industrial emissions, consumer products, and paint.
- Lead brought into homes by family members whose jobs or hobbies are related to lead exposure.
- Playing in bare soil near a heavily-traveled highway, bridge, or elevated train where there is peeling paint, or by previous industrial or motor vehicle emissions.
- Lead in drinking water.
- Prenatal exposure.

## Working With Immigrant Communities

The LPPP surveillance data indicate that foreign-born children with EIBLLs are less likely than U.S.-born children with EIBLLs to have identified lead-based paint hazards in their homes or supplementary addresses.

Lead poisoning among foreign-born children may be associated with exposures in other countries and/or to lead sources related to cultural practices of the child's birth country. Lead exposure sources in other countries may include air pollution from leaded gasoline exhaust and industrial emissions, occupational exposures of children and their families, lead contaminated foods and food containers, lead-containing pottery used for cooking and storing foods, traditional herbal and mineral medicine products, and cosmetics. Also, some children may have had prenatal exposure to lead.

The LPPP works with community and social service organizations serving immigrant communities to build partnerships and increase awareness of lead poisoning.

In 2005, LPPP intensified its outreach and education efforts to the Mexican and South Asian (Bangladeshi and Pakistani) communities:

- At the request of a community-based organization, LPPP developed an English as a Second Language (ESL) class for day laborers that focuses on safe work practices. The LPPP also provided lead poisoning prevention training for professional caseworkers at social service agencies serving immigrant families.
- The LPPP completed a capacity-building project in conjunction with a community housing organization serving the South Asian community. Community based organization (CBO) staff was trained to provide education on safe work practices to construction workers from South Asia, and to conduct outreach to the general community.
- Collaborated with the DOHMH adult lead poisoning program to identify imported herbal medicine products contaminated with lead and mercury. Store owners and wholesalers were ordered to remove products from sale and to post warning signs for customers. See chapter 4 on adult lead poisoning for details.

## Public Education and Outreach

### 2005 Media Campaign

From June through September 2005, LPPP mounted a bilingual (English and Spanish) print media campaign that targeted high-risk neighborhoods in NYC. The health messages were displayed on bus shelters, billboards, phone kiosks, and subway entrances in these neighborhoods. Health messages also were placed on bus side panels for citywide dissemination. Companion materials were developed for use by LPPP staff in other educational activities.

The key messages of the 2005 campaign were

- Lead can cause learning problems.

- Landlords must fix peeling paint. It's the law.
- Wash floors, windowsills, children's hands, and toys often.
- Test children's blood for lead at age 1 and 2.
- Call 311 for information.

### Educating Families and Community-Based Organizations

Community outreach and education targeted to high-risk groups and neighborhoods is an important component of LPPP's lead poisoning prevention strategy. Each year LPPP conducts hundreds of workshops for parents and health and

social service providers, and participates in health fairs and community events.

The LPPP publishes a wide range of educational materials in multiple languages, including brochures for parents, tenants, landlords, contractors, and health care providers. English and Spanish brochures, as well as select materials in Chinese and Bengali, are available on the Internet at <http://www.nyc.gov/lead>.

#### In 2005 LPPP:

- Handled 2,973 calls to the LPPP Information Line.

- Distributed 376,472 pieces of educational material.
- Educated 4,247 parents at 251 workshops held at community-based organizations, health care clinics, schools, day care centers, faith-based organizations, Head Start programs, and Women, Infants, and Children (WIC) centers.
- Reached 15,038 NYC residents at 213 health fairs.
- Trained 466 professional staff from community-based organizations, day care centers, Head Start programs, WIC centers, and other agencies at 23 workshops.

## Promoting Blood Lead Testing

Early identification of lead-poisoned children through blood lead testing is essential to protect children from additional exposure to lead.

### New York State law requires that health care providers:

- Test every child at both 1 and 2 years of age.
- Test children from 6 months to less than 6 years of age if an annual risk assessment shows that they are at risk for lead exposure.

## Outreach to Health Care Providers

Health care providers play a key role in lead poisoning prevention. The LPPP uses multiple strategies to reach and educate health care providers about prevention, screening, and medical management of lead-poisoned children.

#### In 2005, LPPP:

- Provided consultations to 77 health care providers managing the care of a lead-poisoned child.

- Educated 315 health care providers at 9 professional forums.
- Promoted the Provider Online Registry, a secure Internet database that gives providers access to immunization and blood lead histories for their pediatric patients.
- Educated medical students and residents about public health and lead poisoning prevention through collaboration with two NYC health care facility programs.
- Distributed 7,769 copies of the City Health Information (CHI) newsletter on “Childhood Lead Poisoning Prevention and Management” to pediatricians, family medicine providers, and public health professionals.

## Improve Screening

### Medicaid Managed Care Data Match

LPPP continued its data-matching project with 17 Medicaid Managed Care Organizations (MMCOs) under contract with the DOHMH Division of Health Care Access and Improvement (HCAI) to provide services for Medicaid-eligible

### Assessing Risk of Childhood Lead Exposure

Health care providers in New York State are required to assess every child from 6 months to less than 6 years of age for risk of lead exposure. Children who have risk factors for lead poisoning should be tested. Risk factors include:

- Having a sibling or playmate with a high blood lead level.
- Living in, or regularly visiting, an older home (built before 1960) or other location with peeling or damaged paint.
- Living in, or regularly visiting, an older home (built before 1960) or other location that is being, or was, renovated within the last 12 months.
- Having any developmental delays.
- Eating non-food items such as paint chips, crushed pottery, or soil.
- Moving to the U.S. from, or traveling to, a foreign country where lead poisoning may be common.
- Ingesting imported health remedies, cosmetics, spices, food, or pottery.
- Eating food prepared, served, or stored using lead-glazed pottery.
- Playing in bare soil near a heavily-traveled highway, bridge, or elevated train where there is peeling paint.
- Interacting with an adult whose job or hobby involves exposure to lead.
- Being enrolled in Medicaid or the NYC Early Intervention Program.

children. Information on children enrolled in MMCOs is matched against LPPP's blood lead registry to identify children lacking appropriate blood lead tests. Each MMCO follows up with the children's health care providers, encouraging them to order the necessary blood lead test. The data-matching project was initially supported through a Memorandum of Understanding with each MMCO. In 2005, participation in the LPPP data match was added to the contract between HCAI and the MMCOs.

#### Early Intervention Program Data Match

LPPP has established a similar data-matching project with the DOHMH Early Intervention Program (EIP), which provides services for children up to 3 years of age who have, or are at risk for, developmental delays. The EIP sends

letters to parents of children identified by LPPP as lacking appropriate blood lead tests, encouraging them to have their child tested.

#### Provider Intervention in High-Risk Neighborhoods

In a pilot project with the DOHMH Bureau of Immunization, 6 medical practices in areas with low rates of testing and high rates of children with EIBLLs were selected for on-site chart review. Nurses from LPPP selected and reviewed records for up to 40 children between the ages of 24 and 36 months, to evaluate providers' rates of blood lead testing and barriers to testing. Findings and recommendations for improvement were reported to the provider. A more detailed intervention to improve testing rates at medical practices in high-risk Brooklyn neighborhoods is being developed.

## Care Coordination and Environmental Intervention

### Monitoring Blood Lead Levels for Children With Elevated BLLs

LPPP sends a letter and educational material to the family and health care provider of every child with a BLL greater than or equal to 10 µg/dL but less than 15 µg/dL.<sup>7</sup>

- Recommending follow-up blood lead testing.
- Providing information on lead poisoning prevention.
- Recommending that families report peeling paint to NYC's 311 hotline if the landlord fails to make repairs.

The LPPP also monitors the child's record in the blood lead test registry. If follow-up blood lead tests are not administered within the appropriate period, reminder letters are sent to the family and the health care provider.

### Coordinating Care for Children With EIBLLs

The LPPP initiates case coordination and environmental intervention services at the time a child is reported with a BLL greater than or equal to 15 µg/dL, the current EIBLL.

Case coordination includes:

- Educating the child's family and health care provider about ways to reduce the child's exposure to lead.
- Educating the child's health care provider about appropriate medical management, including appropriate intervals for follow-up blood testing.
- Tracking the results of follow-up blood lead tests to determine changes in BLL.
- Assisting the family and health care provider with referrals to EIP.
- Referring families to temporary lead-safe housing as necessary.

- Consulting with health care providers of children with BLLs  $\geq 45$  µg/dL to ensure that they receive appropriate care, which may include medical treatment, such as chelation and hospitalization.

### Providing Environmental Intervention for Children With BLLs $\geq 15$ µg/dL

In addition to case coordination, LPPP takes action to identify and eliminate sources of lead exposure in the child's environment.

Environmental intervention includes:

- Inspecting the child's home and supplementary addresses (babysitter, homes of relatives) and interviewing the child's family to identify potential sources of lead exposure.
- Ordering the building owner to abate identified lead-based paint hazards.
- Monitoring abatement work for timely completion and use of lead-safe work practices.
- Referring the apartment to HPD to make the repairs if the building owner fails to do so within the mandatory time.
- Facilitating relocation to lead-safe apartments for families who need alternative housing during lead hazard abatement.

#### In 2005:

- 1,294 primary addresses and 355 supplementary addresses were inspected.
- 4,981 inspections were performed to monitor progress and safety of ordered abatements.
- 324 apartments were referred to HPD's Emergency Repair Program after landlords failed to make repairs.
- 21 families were accommodated in lead-safe apartments.

## Using Data to Strengthen LPPP Activities

The LPPP monitors BLLs, screening, and rates of lead poisoning throughout NYC. Each year, LPPP receives over 400,000 blood lead test results for more than 300,000 children. These testing data, along with other data collected through environmental intervention and case coordination services, are maintained in an electronic registry.

The LPPP routinely complements its surveillance and case coordination data with other publicly available demographic and housing data to accomplish the following:

- Research risk factors for lead poisoning in NYC.
- Identify geographic and demographic patterns of lead poisoning.
- Target appropriate interventions for high-risk groups.
- Assess effectiveness of interventions.
- Support data-matching collaborations that promote increased blood lead testing among high-risk children.
- Track individual children with elevated BLLs to ensure they receive timely and appropriate services.
- Evaluate the quality and timeliness of program activities and service delivery.

## Chapter 4: Adult Lead Poisoning in New York City in 2005

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*The most common source of adult lead poisoning is occupational exposure to lead in the construction industry. Most lead-poisoned workers are exposed by breathing lead dust or lead fumes while performing activities that disturb lead-based paint. Construction workers who repair and paint steel bridges and other steel structures are at greatest risk because old industrial or residential paint may contain lead. Workers in other industries and hobbyists may be at risk if they work with metal, paint, pigments, and glazes that contain lead. Adults can also be exposed to lead through the use of contaminated products such as imported health remedies, spices, foods, pottery, and cosmetics.*

*Pregnant women present a particular concern in adult lead poisoning. During pregnancy, a woman who has a history of lead exposure can pass lead along to her developing fetus. Not only is the mother in danger of the harmful health effects caused by lead, her baby is also at risk for lead poisoning and its consequences. Common sources of exposure for pregnant women include: childhood exposure while growing up in a foreign country; using imported health remedies, foods, spices, and cosmetics, or cooking with imported pottery; eating non-food items such as clay, pottery, soil, or paint chips; and working in a lead-related occupation or hobby.*

### **Environmental and Occupational Disease Epidemiology (EODE) Program**

The EODE program investigates and tracks cases of elevated blood lead levels (BLLs) in NYC residents, age 16 years and older. Upon receiving information about individuals with elevated blood lead levels (BLLs) from the New York State Department of Health, EODE notifies affected

individuals of their blood lead level, investigates the sources of exposure, and monitors the blood lead levels. EODE also promotes best practices to prevent lead poisoning in the workplace and to reduce other adult lead exposures by educating workers, employers, and medical providers.

## Health Effects of Adult Lead Poisoning

In adults, lead primarily affects the nervous system but can also damage the kidneys, blood, and reproductive system. Many lead-poisoned adults do not have any noticeable symptoms.

- Lead poisoning may cause: headaches, irritability, stomach cramps, constipation, muscle or joint pain, fatigue, sleep problems, and loss of sex drive.
- Permanent damage from lead poisoning may include: high blood pressure, nerve disorders, brain damage, kidney damage, and reproductive system damage.
- Health effects of lead poisoning during pregnancy may include: high blood pressure in pregnant women, increased risk of miscarriage, premature births, decreased fetal growth, and future learning and behavior problems as the child grows.

## Blood Lead Testing in Adults

Blood lead testing is important for monitoring lead exposure. Both Federal and New York State laws require employers to provide regular blood lead testing for workers who are exposed to lead on the job. In addition, state law requires health care providers to assess pregnant women for the risk of lead exposure at the first prenatal visit, and to test for lead poisoning if indicated. Adults may also be screened for lead poisoning by their health care providers to assess potential lead exposure. Blood lead test results for NYC adult residents are reported to the EODE lead registry.

## Care Coordination and Case Investigation Services for Adults With Lead Poisoning

Intervention services for adults with lead poisoning are determined by BLL and pregnancy status.

- For adults with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$ , EODE sends letters informing individuals about their BLLs

and provides them with educational materials on the health effects of lead poisoning and ways to prevent lead exposure.

- **In 2005**, 1,228 adults with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$  were reported.
- For adults with BLLs  $\geq 25$   $\mu\text{g}/\text{dL}$ , EODE interviews each person to assess potential lead exposures and provides educational information on preventing future lead exposures. When a potential occupational exposure is identified, employer interviews and worksite visits may also be conducted.
  - **In 2005**, 268 adults with BLLs  $\geq 25$   $\mu\text{g}/\text{dL}$  were reported. Of these:
    - 153 (57%) individuals were identified with potential occupational exposures.
    - 7 (2%) individuals were identified as having a non-occupational lead exposure due to contaminated products such as imported health remedies, spices, and foods.
    - 66 (25%) individuals had unknown exposures to lead.
    - 42 (16%) women with BLLs  $\geq 25$   $\mu\text{g}/\text{dL}$  were identified as pregnant (case coordination services provided by LPPP).
- For pregnant women with BLLs  $\geq 15$   $\mu\text{g}/\text{dL}$ , EODE confirms pregnancy status and refers individuals to the Lead Poisoning Prevention Program (LPPP) for case coordination services.
  - **In 2005**, 84 pregnant women with BLL  $\geq 15$   $\mu\text{g}/\text{dL}$  were identified.

**In 2005**, EODE provided the following services for adults with lead poisoning:

- Sent 2,504 letters to adults with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$ .
- Made follow-up phone calls to 268 adults with BLLs  $\geq 25$   $\mu\text{g}/\text{dL}$ .
- Contacted 33 employers to discuss lead-related work exposures.

## Preventing Lead Poisoning in the Workplace

Federal and state laws require employers to protect workers from lead exposure. Employers must:

- Inspect lead work areas and test the air for lead.
- Use safe work practices and engineering controls.
- Supply workers with proper respirators and protective clothing.
- Provide regular blood lead tests.
- Provide clean eating areas, hand washing stations and showers.
- Train workers about lead hazards on the job and ways to prevent lead exposure.
- Remove construction workers from lead work if their blood lead level is greater than or equal to 50 µg/dL; other workers must be removed at 60 µg/dL.
- Provide medical evaluations for workers with a BLL greater than or equal to 40 µg/dL, or if the worker is concerned about lead exposure and their ability to have children.

- Referred 2 worksites to the Occupational Safety and Health Administration (OSHA) for investigation of potential workplace lead hazards.
- Referred 84 pregnant women to LPPP for case coordination services.

## Coordinating Care for Pregnant Women With Elevated BLLs and Their Newborns

LPPP has been providing case coordination services, in collaboration with the EODE, to pregnant women with elevated BLLs since the early 1990's.<sup>8</sup>

For pregnant women with BLLs  $\geq$  15 µg/dL, LPPP will:

- Contact both the woman and her health care provider to provide information on the consequences of prenatal exposure to lead.
- Assist the woman and her health care provider to identify possible sources of lead exposure.
- Follow the woman throughout her pregnancy and advise her health care provider on appropriate medical management to minimize exposure to the fetus and newborn.
- Provide case coordination services for the newborn if the child is born with an elevated BLL.

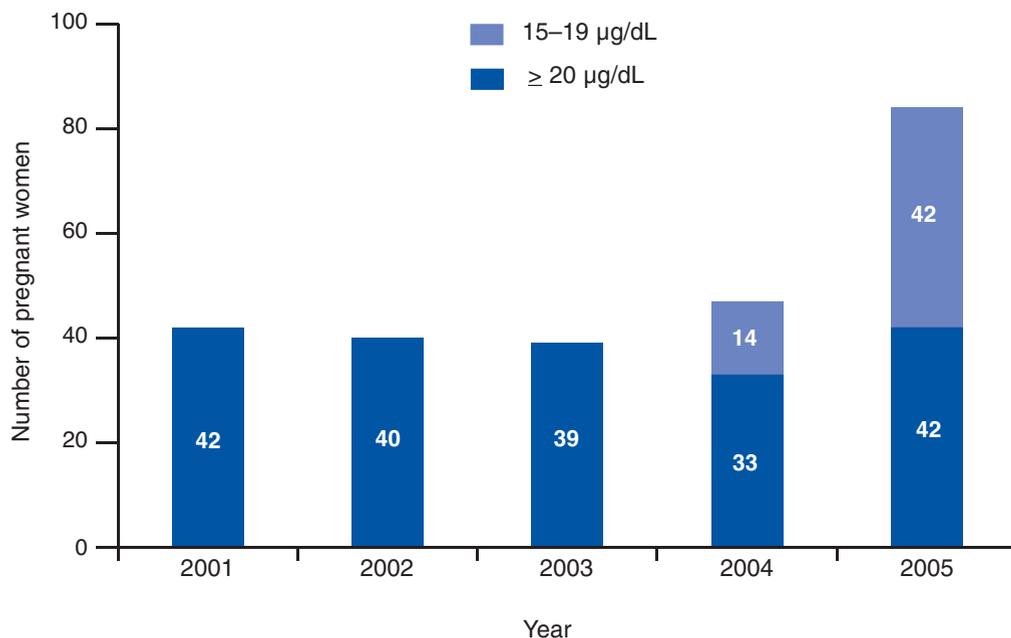
### In 2005:

- 84 pregnant women with BLLs  $\geq$  15 µg/dL received services from LPPP (see Figure 12 and Table 5).

Of these 84 pregnant women:

- 98% were foreign-born (by comparison, in 2005, 53% of births in NYC were to foreign-born women).
- 57% were born in Mexico.
- 29% had lived in the U.S. for less than one year, 33% for 1–4 years, and 34% for more than 5 years.
- 21% reported using pottery or imported products, such as food, spices, cosmetics, or herbal medicine products during pregnancy.
- 4% reported eating dirt, clay, or crushed pottery during pregnancy.
- 4% reported recent possible occupation exposure.

**Figure 12**  
Number of Pregnant Women Receiving Case Coordination Services Increased\*



\* Prior to August 2004, LPPP provided services to pregnant women with BLLS  $\geq 20$   $\mu\text{g/dL}$ . In August 2004, the BLL that triggers case coordination was reduced to 15  $\mu\text{g/dL}$  to correspond with the change in the threshold for environmental intervention for children.

### Assessing Risk of Lead Exposure Among Pregnant Women

Health care providers are required to assess all pregnant women for lead exposure at the initial prenatal visit and to test those at risk, as required by New York state law. Pregnant women who have risk factors for lead poisoning should be tested. Risk factors include:

- Foreign birth or travel outside of the United States.
- Using imported health remedies, spices, foods, or cosmetics.
- Ingesting food that has been prepared, stored, or served in lead-glazed pottery.
- Chewing, eating, or mouthing non-food items such as clay, crushed pottery, soil, or paint chips at any time during pregnancy.
- Living in a home with recent renovation or repair work.
- Having a job or hobby that involves possible lead exposure, such as home renovation or working with glass, ceramics, or jewelry.

## Non-Occupational Sources of Adult Lead Exposure

Occupational exposure remains the primary source of lead poisoning among adults. However, EODE and LPPP have identified other sources of lead exposure including:

- home renovation/repair and furniture refurbishing.
- hobbies or jobs involving work with firearms, arts/crafts work involving ceramics, glass, metals or color pigments.
- imported health remedies, foods, spices, cosmetics, pottery, as well as metal toys and jewelry.

EODE and LPPP work closely together to develop effective strategies to reduce exposure to these sources.

### Imported Herbal Medicine Products Containing Lead

In 2005, EODE and LPPP began an investigation of the availability of herbal medicine

products manufactured in India containing lead and/or mercury. Responding to recent research studies and case reports, DOHMH staff visited retail stores and purchased products identified as containing lead or mercury. Laboratory testing identified three herbal medicine products imported from India that contained dangerous levels of lead and mercury. EODE also recently investigated adult lead poisoning cases associated with contaminated herbal products obtained in India. These cases were associated with products obtained directly in India and not in NYC.

Using its authority under the Health Code, DOHMH embargoed these herbal medicine products and ordered store owners to stop selling these products and to post warning signs for customers. In December 2005, a press release and fact sheet were issued warning NYC consumers and vendors about the herbal medicine products. Public outreach and education efforts were conducted in collaboration with the NYC Poison Control Center, local Indian media, and community organizations serving the South Asian community.

## Chapter 5: Strategies for Continued Progress

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New York City's goal is to eliminate childhood lead poisoning by the year 2010. While we have made tremendous progress over the past decades, lead poisoning remains a serious public health problem.

Reaching this goal will require innovative strategies as well as continued implementation of successful programs. Intervention efforts must be targeted to communities and populations at greatest risk. New partnerships must be developed in order to maximize our impact and leverage resources. In 2006, we will utilize strategies that:

- Eliminate or reduce lead-based paint hazards in homes and communities.
- Reach tenants, landlords, housing organizations, contractors, hardware stores, and other agencies to increase knowledge of lead-safe work practices and NYC laws.
- Reach and educate high-risk immigrant communities about all sources of lead exposure.
- Identify non-paint lead sources and develop effective prevention activities through research, investigations, and collaborations with EODE

and with organizations serving high-risk groups.

- Improve screening for children through outreach to health care providers, community organizations, and families, and through data-matching projects to identify children who have not been tested.
- Prevent lead poisoning in pregnant women and their newborns through outreach, education, and appropriate medical management.

Preventing adult lead poisoning is also an important goal. Reaching this goal will require strengthening surveillance, increasing screening, and building partnerships with communities, workers, employers and owners of lead-painted structures. In 2006, we will utilize strategies that:

- Prevent lead poisoning in adults through outreach, education and appropriate medical management.
- Identify occupations with lead hazards and promote hazard reduction.
- Collaborate with LPPP to identify non-paint lead sources and develop effective prevention activities.

## Endnotes

- <sup>1</sup> Lead poisoning is defined in the NYC Health Code as a blood lead level (BLL) greater than or equal to 10 micrograms of lead per deciliter of blood.
- <sup>2</sup> Since 1994, laboratories have been required to report the results of all blood lead tests, not just elevated blood lead levels, to the New York State Department of Health (NYS DOH). Because 1995 was the first complete year of mandatory reporting, that year is used as the basis for comparisons over time.
- <sup>3</sup> Environmental Intervention Blood Lead Level (EIBLL) is the BLL at which LPPP provides case coordination and environmental intervention to lead-poisoned children. Since August 2004, the EIBLL has been defined as a BLL  $\geq 15$   $\mu\text{g}/\text{dL}$ . From July 1999 to August 2004, the EIBLL was defined as a BLL  $\geq 20$   $\mu\text{g}/\text{dL}$  or two BLLs of 15–19  $\mu\text{g}/\text{dL}$  taken at least 3 months apart. The EIBLL has been reduced 6 times since it was set at 60  $\mu\text{g}/\text{dL}$  in 1970. In general, the reductions were made in response to emerging evidence of adverse health effects at successively lower BLLs.
- <sup>4</sup> In this report, neighborhoods are defined as those established by the United Hospital Fund, which has aggregated contiguous NYC ZIP codes into 42 neighborhoods.
- <sup>5</sup> The 9 neighborhoods were: Bedford Stuyvesant-Crown Heights, East Flatbush-Flatbush, Williamsburg-Bushwick, East New York, and Borough Park in Brooklyn; Fordham-Bronx Park in the Bronx; Southwest Queens, Jamaica, and West Queens in Queens.
- <sup>6</sup> The 8 neighborhoods were: Bedford Stuyvesant-Crown Heights, East Flatbush-Flatbush, Williamsburg-Bushwick, and Borough Park in Brooklyn; Fordham-Bronx Park and Crotona-Tremont in the Bronx; Southwest Queens and West Queens in Queens.
- <sup>7</sup> Since August 2004, this activity is performed for children with BLLs of 10–14  $\mu\text{g}/\text{dL}$ . Previously, children with BLLs of 10–19  $\mu\text{g}/\text{dL}$  received these services.
- <sup>8</sup> Prior to August 2004, LPPP provided services to pregnant women with BLLs  $\geq 20$   $\mu\text{g}/\text{dL}$ . In August 2004, the BLL that triggers intervention was reduced to 15  $\mu\text{g}/\text{dL}$ , to correspond with the change in the EIBLL for children.

# Appendix

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## *Acronyms Used in This Report*

BLL	Blood Lead Level
CBO	Community Based Organization
CDC	U.S. Centers for Disease Control and Prevention
CHI	City Health Information
EBLL	Elevated Blood Lead Level
EIBLL	Environmental Intervention Blood Lead Level
EIP	Early Intervention Program, DOHMH
EODE	Environmental and Occupational Disease and Epidemiology Program, DOHMH
ESL	English as a Second Language
DOHMH	New York City Department of Health and Mental Hygiene
DPHO	District Public Health Office, DOHMH
HCAI	Division of Health Care Access and Improvement, DOHMH
HEPA	High Efficiency Particulate Air
HPD	New York City Department of Housing Preservation Development
HUD	U.S. Department of Housing and Urban Development
LPPP	Lead Poisoning Prevention Program, DOHMH
MMCO	Medicaid Managed Care Organization
NHANES	National Health and Nutrition Examination Survey
NYC	New York City
NYS	New York State
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration, U.S. Department of Labor
TCNY	Take Care New York
U.S.	United States
WIC	Special Supplemental Nutrition Program for Women, Infants and Children, U. S. Department of Agriculture

## Table 1

### New York City intervention protocols for lead-poisoned children.

Category	BLL <sup>(a)</sup>	Intervention
<b>Elevated BLL</b>	$\geq 10 \mu\text{g/dL}$ <sup>(b)</sup>	Contact with family and medical provider regarding exposure and follow-up blood testing; these services are provided to all lead-poisoned children including those with BLLs of 10–14 $\mu\text{g/dL}$ as well as those in the EIBLL group.
<b>EIBLL<sup>(c)</sup></b>	$\geq 15 \mu\text{g/dL}$	Environmental assessment to identify exposure or sources; enforcement of lead-based paint hazard abatement requirements.

(a) Blood Lead Levels (BLLs) are measured in micrograms ( $\mu\text{g}$ ) of lead per deciliter (dL) of blood.

(b) Since 1992, the NYC Health Code has defined lead poisoning as a BLL  $\geq 10 \mu\text{g/dL}$ .

(c) Environmental Blood Intervention Lead Level (EIBLL) is the term used by the LPPP to designate cases for environmental inspection and enforcement of abatement requirements. The EIBLL was set at 20  $\mu\text{g/dL}$  in 1992; children with persistent BLL of 15–19  $\mu\text{g/dL}$  were included as of July 1999. The EIBLL was lowered to 15  $\mu\text{g/dL}$  as of August 2004, consistent with Local Law 1.

**Table 2**

**Demographic and environmental profile of children newly identified with blood lead levels at or above the Environmental Intervention Blood Lead Level, ages 0 to less than 18 years (N = 875) and ages 6 months to less than 6 years (N = 728): New York City, 2005.**

	0 years – < 18 years			6 months – < 6 years		
	Number EIBLL <sup>(a)</sup>	Percent EIBLL	EIBLL Rate <sup>(b)</sup> (number per 1,000 tested)	Number EIBLL <sup>(a)</sup>	Percent EIBLL	EIBLL Rate <sup>(b)</sup> (number per 1,000 tested)
<b>Total</b>	875	100.0%	2.2	728	100.0%	2.3
<b>Age</b>						
Less than 6 months old	23	2.6%	12.5 <sup>(c)</sup>	—	—	—
6 months to less than 1 year old	35	4.0%	1.1	35	4.8%	1.1
1 year old	240	27.4%	3.1	240	33.0%	3.1
2 years old	213	24.3%	3.4	213	29.3%	3.4
3 years old	112	12.8%	2.2	112	15.4%	2.2
4 years old	81	9.3%	1.6	81	11.1%	1.6
5 years old	47	5.4%	1.3	47	6.5%	1.3
6 to less than 18 years old	124	14.2%	1.6	—	—	—
<b>Gender</b>						
Female	413	47.2%	2.2	354	48.6%	2.4
Male	462	52.8%	2.4	374	51.4%	2.4
<b>Borough</b>						
Manhattan	77	8.8%	1.5	58	8.0%	1.4
Bronx	147	16.8%	1.9	124	17.0%	2.0
Brooklyn	382	43.7%	3.0	318	43.7%	3.3
Queens	240	27.4%	2.5	202	27.7%	2.7
Staten Island	29	3.3%	1.7	26	3.6%	1.8
<b>Race/ethnicity</b>						
Hispanic	352	40.2%		286	39.3%	
Non-Hispanic black	271	31.0%		222	30.5%	
Non-Hispanic white	83	9.5%		77	10.6%	
Asian	155	17.7%		131	18.0%	
Other/Unknown	14	1.6%		12	1.6%	
<b>Country of birth</b>						
United States	695	79.4%		632	86.8%	
Not United States	174	19.9%		92	12.6%	
Unknown	6	0.7%		4	0.5%	

Table 2 (continued)

	0 years – < 18 years			6 months – < 6 years		
	Number EIBLL <sup>(a)</sup>	Percent EIBLL	EIBLL Rate <sup>(b)</sup> (number per 1,000 tested)	Number EIBLL <sup>(a)</sup>	Percent EIBLL	EIBLL Rate <sup>(b)</sup> (number per 1,000 tested)
<b>Blood lead level at case assignment (µg/dL)</b>						
15–19	535	61.1%		444	61.0%	
20–29	250	28.6%		203	27.9%	
30–39	64	7.3%		57	7.8%	
40–49	15	1.7%		14	1.9%	
50–59	4	0.5%		4	0.5%	
60–69	4	0.5%		3	0.4%	
70+	3	0.3%		3	0.4%	
<b>Year primary residence was built</b>						
1939 or earlier	722	82.5%		610	83.8%	
1940–1949	31	3.5%		27	3.7%	
1950–1959	44	5.0%		36	5.0%	
1960–1969	38	4.3%		26	3.6%	
1970–present	40	4.6%		29	4.0%	
<b>Size of building where the child resides</b>						
Building has less than 3 dwelling units	321	36.7%		275	37.8%	
Building has 3 or more dwelling units	554	63.3%		453	62.2%	
<b>Lead-based paint hazard identified at child's residence<sup>(d)</sup></b>						
No lead-based paint hazard identified	199	22.7%		152	20.9%	
Lead-based paint hazard was identified	676	77.3%		576	79.1%	

(a) The Environmental Intervention Blood Lead Level (EIBLL) is defined as a venous BLL  $\geq 15$  µg/dL, consistent with Local Law 1.

(b) Data on some indicators were missing from a sizeable number of tests reported to the LPPP; thus, case rates could not be calculated for all indicators because denominator data were not available.

(c) The case rate for children younger than 6 months was very high because many of the infants tested were referred for testing due to their high risk for lead poisoning from prenatal exposure.

(d) This included the child's primary residence and supplementary addresses where the child spent considerable periods of time. Hazards were identified by March 31, 2006.

**Table 3**

Numbers and rates of (1) children tested for lead poisoning; (2) children with elevated blood lead levels; and (3) children with an Environmental Intervention Blood Lead Level, ages 0 months to less than 18 years, by borough, and United Hospital Fund Neighborhood: New York City, 2005.

**Ages 0 months to less than 18 years**

United Hospital Fund Neighborhood	(1) Tests <sup>(a)</sup>	(2) Elevated blood lead levels <sup>(b)</sup>			(3) Environmental Intervention Blood Lead Levels (EIBLL) <sup>(c)</sup>				
	Tested	Newly identified BLL $\geq 10$ $\mu\text{g}/\text{dL}$			Newly identified EIBLL				
	Number	Number	Rate BLL $\geq 10$ /1,000 tested	Rate EIBLL /1,000 tested	Number	Rate EIBLL /1,000 tested	Low	High	95% CI
<b>New York City total</b>	<b>389,603</b>	<b>3,190</b>	<b>8.2</b>	<b>2.2</b>	<b>875</b>	<b>2.2</b>	<b>1.78</b>	<b>2.06</b>	
NYC, unknown borough	92	0	-	-	0	-	-	-	
<b>Bronx</b>	<b>82,345</b>	<b>609</b>	<b>7.4</b>	<b>1.8</b>	<b>147</b>	<b>1.8</b>	<b>1.51</b>	<b>2.10</b>	
<i>Bronx unknown or invalid ZIP code</i>	1,488	0	-	-	0	-	-	-	
Crotona - Tremont	14,400	132	9.2	2.0	29	2.0	1.35	2.89	
Fordham - Bronx Park	16,356	132	8.1	2.1	35	2.1	1.49	2.98	
High Bridge - Morrisania	14,003	111	7.9	2.2	31	2.2	1.50	3.14	
Hunts Point - Mott Haven	9,659	66	6.8	2.1	20	2.1	1.26	3.20	
Kingsbridge - Riverdale	3,249	27	8.3	1.2	4	1.2	0.34	3.15	
Northeast Bronx	8,529	48	5.6	1.4	12	1.4	0.73	2.46	
Pelham - Throgs Neck	14,661	93	6.3	1.1	16	1.1	0.62	1.77	
<b>Brooklyn</b>	<b>136,266</b>	<b>1,267</b>	<b>9.3</b>	<b>2.8</b>	<b>382</b>	<b>2.8</b>	<b>2.53</b>	<b>3.10</b>	
<i>Brooklyn unknown or invalid ZIP code</i>	3,693	1	-	-	0	-	-	-	
Bedford Stuyvesant - Crown Heights	21,749	184	8.5	2.5	54	2.5	1.87	3.24	
Bensonhurst - Bay Ridge	6,830	54	7.9	2.0	14	2.0	1.12	3.44	
Borough Park	14,167	151	10.7	3.5	49	3.5	2.56	4.57	
Canarsie - Flatlands	9,421	48	5.1	1.9	18	1.9	1.13	3.02	
Coney Island - Sheepshead Bay	10,144	81	8.0	2.1	21	2.1	1.28	3.16	
Downtown - Brooklyn Heights - Park Slope	7,886	83	10.5	3.0	24	3.0	1.95	4.53	
East Flatbush - Flatbush	18,519	219	11.8	3.9	72	3.9	3.04	4.90	
East New York	14,096	130	9.2	2.5	35	2.5	1.73	3.45	
Greenpoint	5,910	92	15.6	2.5	15	2.5	1.42	4.19	
Sunset Park	7,792	65	8.3	2.3	18	2.3	1.37	3.65	
Williamsburg - Bushwick	16,059	159	9.9	3.9	62	3.9	2.96	4.95	

Table 3 (continued)

	(1) Tests <sup>(a)</sup>	(2) Elevated blood lead levels <sup>(b)</sup>		(3) Environmental Intervention Blood Lead Levels (EIBLL) <sup>(c)</sup>			
	Tested	Number	Newly identified BLL $\geq 10$ $\mu\text{g}/\text{dL}$	Number	Rate BLL $\geq 10$ /1,000 tested	Rate EIBLL /1,000 tested	95% CI Low High
<b>United Hospital Fund Neighborhood</b>							
<b>Manhattan</b>		<b>53,629</b>	<b>423</b>	<b>77</b>	<b>1.4</b>	<b>1.13</b>	<b>1.79</b>
<i>Manhattan unknown or invalid ZIP code</i>	2,282	1	-	0	-	-	-
Central Harlem - Morningside Heights	7,557	70	9.3	15	2.0	1.11	3.27
Chelsea - Clinton	2,375	20	8.4	2	0.8	0.10	3.04
East Harlem	6,049	56	9.3	11	1.8	0.91	3.25
Gramercy Park - Murray Hill	1,941	22	11.3	1	0.5	0.01	2.87
Greenwich Village - SoHo	1,507	27	17.9	1	0.7	0.02	3.70
Lower Manhattan	961	3	3.1	0	0.0	-	-
Union Square - Lower East Side	5,765	54	9.4	12	2.1	1.08	3.64
Upper East Side	5,100	19	3.7	4	0.8	0.21	2.01
Upper West Side	5,831	36	6.2	4	0.7	0.19	1.76
Washington Heights - Inwood	14,261	115	8.1	27	1.9	1.25	2.75
<b>Queens</b>	<b>100,097</b>	<b>791</b>	<b>7.9</b>	<b>240</b>	<b>2.4</b>	<b>2.10</b>	<b>2.72</b>
<i>Queens unknown or invalid ZIP code</i>	2,318	2	-	0	-	-	-
Bayside - Little Neck	2,199	3	1.4	2	0.9	0.11	3.29
Flushing - Clearview	7,741	58	7.5	18	2.3	1.38	3.6
Fresh Meadows	3,858	14	3.6	5	1.3	0.42	3.02
Jamaica	15,270	123	8.1	41	2.7	1.93	3.64
Long Island City - Astoria	8,497	70	8.2	25	2.9	1.90	4.34
Ridgewood - Forest Hills	9,708	49	5.0	14	1.4	0.79	2.42
Rockaway	5,400	28	5.2	9	1.7	0.76	3.16
Southeast Queens	8,142	42	5.2	13	1.6	0.85	2.73
Southwest Queens	13,355	133	10.0	35	2.6	1.83	3.64
West Queens	23,609	269	11.4	78	3.3	2.61	4.12
<b>Staten Island</b>	<b>17,174</b>	<b>100</b>	<b>5.8</b>	<b>29</b>	<b>1.7</b>	<b>1.13</b>	<b>2.43</b>
<i>Staten Island unknown or invalid ZIP code</i>	107	0	-	0	-	-	-
Port Richmond	3,343	44	13.2	11	3.3	1.64	5.89
South Beach - Tottenville	5,693	13	2.3	1	0.2	0.00	0.98
Stapleton - St. George	5,175	40	7.7	15	2.9	1.62	4.78
Willowbrook	2,856	3	1.1	2	0.7	0.08	2.53

(a) Test types: venous, capillary, unspecified.

(b) Elevated blood lead level was defined as a venous, capillary, or unspecified BLL  $\geq 10$   $\mu\text{g}/\text{dL}$ .(c) The Environmental Intervention Blood Lead Level (EIBLL) is defined as a venous BLL  $\geq 15$   $\mu\text{g}/\text{dL}$ , consistent with Local Law 1.

**Table 4**

Numbers and rates of (1) children tested for lead poisoning; (2) children with elevated blood lead levels; and (3) children with an Environmental Intervention Blood Lead Level, ages 6 months to less than 6 years, by borough, and United Hospital Fund Neighborhood: New York City, 2005.

Ages 6 months to less than 6 years											
	(1) Tests <sup>(e)</sup>			(2) Elevated blood lead levels <sup>(b)</sup>			(3) Environmental Intervention Blood Lead Levels (EIBLL) <sup>(e)</sup>				
	Tested			Newly identified BLL ≥ 10 µg/dL			Newly identified EIBLL				
	Number	Percent tested Vital records <sup>(d)</sup>	Census 2000 <sup>(e)</sup>	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	Number	95% CI Low	High	
<b>New York City total</b>	<b>311,428</b>	<b>50</b>	<b>52</b>	<b>2,644</b>	<b>8.5</b>	<b>728</b>	<b>2.34</b>		<b>2.17</b>	<b>2.51</b>	
NYC, unknown borough	60	—	—	0	—	0	—		—	—	
<b>Bronx</b>	<b>64,752</b>	<b>55</b>	<b>52</b>	<b>520</b>	<b>8.0</b>	<b>124</b>	<b>1.91</b>		<b>1.59</b>	<b>2.28</b>	
<i>Bronx unknown or invalid ZIP code</i>	1,091	—	—	0	—	0	—		—	—	
Crotona - Tremont	11,223	51	50	113	10.1	28	2.49		1.66	3.61	
Fordham - Bronx Park	12,796	53	51	113	8.8	30	2.34		1.58	3.35	
High Bridge - Morrisania	11,073	53	55	94	8.5	23	2.08		1.32	3.12	
Hunts Point - Mott Haven	7,501	58	58	55	7.3	17	2.27		1.32	3.63	
Kingsbridge - Riverdale	2,744	51	48	22	8.0	2	0.73		0.09	2.63	
Northeast Bronx	6,772	59	49	43	6.3	11	1.62		0.81	2.91	
Pelham - Throgs Neck	11,552	55	49	80	6.9	13	1.13		0.60	1.92	
<b>Brooklyn</b>	<b>107,263</b>	<b>50</b>	<b>53</b>	<b>1,073</b>	<b>10.0</b>	<b>318</b>	<b>2.96</b>		<b>2.65</b>	<b>3.31</b>	
<i>Brooklyn unknown or invalid ZIP code</i>	2,797	—	—	0	—	0	—		—	—	
Bedford Stuyvesant - Crown Heights	16,085	56	57	166	10.3	44	2.74		1.99	3.67	
Bensonhurst - Bay Ridge	5,826	44	49	47	8.1	11	1.89		0.94	3.38	
Borough Park	11,822	35	40	124	10.5	43	3.64		2.63	4.90	
Canarsie - Flatlands	7,364	53	50	38	5.2	12	1.63		0.84	2.85	
Coney Island - Sheepshead Bay	8,859	47	50	75	8.5	21	2.37		1.47	3.62	
Downtown-Brooklyn Heights-Park Slope	6,451	42	47	76	11.8	21	3.26		2.02	4.98	
East Flatbush - Flatbush	14,664	51	55	150	10.2	49	3.34		2.47	4.42	
East New York	10,603	63	61	115	10.8	31	2.92		1.99	4.15	
Greenpoint	5,017	39	44	89	17.7	14	2.79		1.53	4.68	
Sunset Park	6,385	46	60	55	8.6	16	2.51		1.43	4.07	
Williamsburg - Bushwick	11,390	57	57	138	12.1	56	4.92		3.71	6.38	

Table 4 (continued)

	(1) Tests <sup>(a)</sup>		(2) Elevated blood lead levels <sup>(b)</sup>		(3) Environmental Intervention Blood Lead Levels (EIBLL) <sup>(c)</sup>			
	Tested		Newly identified BLL $\geq 10$ $\mu\text{g}/\text{dL}$		Newly identified EIBLL			
	Number	Percent tested Vital records <sup>(d)</sup> Census 2000 <sup>(e)</sup>	Number	Rate BLL $\geq 10$ /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI Low	95% CI High
<b>Manhattan</b>	<b>44,328</b>	<b>41</b>	<b>54</b>	<b>8.1</b>	<b>58</b>	<b>1.31</b>	<b>0.99</b>	<b>1.69</b>
<i>Manhattan unknown or invalid ZIP code</i>	1,819	—	—	—	0	—	—	—
Central Harlem - Morningside Heights	6,067	49	53	9.9	14	2.31	1.26	3.87
Chelsea - Clinton	2,124	33	60	8.9	1	0.47	0.01	2.62
East Harlem	4,767	50	56	8.4	5	1.05	0.34	2.45
Gramercy Park - Murray Hill	1,763	28	51	11.9	0	0.00	—	—
Greenwich Village - SoHo	1,373	32	49	17.5	1	0.73	0.02	4.06
Lower Manhattan	828	35	57	3.6	0	0.00	—	—
Union Square - Lower East Side	4,867	36	57	9.0	9	1.85	0.85	3.51
Upper East Side	4,721	31	46	4.0	4	0.85	0.23	2.17
Upper West Side	5,359	35	51	6.5	3	0.56	0.12	1.64
Washington Heights - Inwood	10,640	46	51	8.6	21	1.97	1.22	3.02
<b>Queens</b>	<b>80,514</b>	<b>53</b>	<b>51</b>	<b>7.5</b>	<b>202</b>	<b>2.51</b>	<b>2.17</b>	<b>2.88</b>
<i>Queens unknown or invalid ZIP code</i>	1,601	—	—	—	0	—	—	—
Bayside - Little Neck	1,902	67	39	1.6	2	1.05	0.13	3.80
Flushing - Clearview	6,584	48	42	7.3	14	2.13	1.16	3.57
Fresh Meadows	3,334	55	50	3.9	5	1.50	0.49	3.50
Jamaica	12,182	58	55	8.4	36	2.96	2.07	4.09
Long Island City - Astoria	6,870	46	49	6.7	20	2.91	1.78	4.50
Ridgewood - Forest Hills	7,647	49	51	5.9	14	1.83	1.00	3.07
Rockaway	4,408	63	48	6.1	9	2.04	0.93	3.88
Southeast Queens	6,428	62	45	5.8	12	1.87	0.96	3.26
Southwest Queens	10,357	52	49	9.5	30	2.90	1.95	4.14
West Queens	19,201	47	56	9.7	60	3.12	2.38	4.02

Table 4 (continued)

	(1) Tests <sup>(a)</sup>		(2) Elevated blood lead levels <sup>(b)</sup>		(3) Environmental Intervention Blood Lead Levels (EIBLL) <sup>(c)</sup>				
	Number	Percent tested Vital records <sup>(d)</sup>	Census 2000 <sup>(e)</sup>	Newly identified BLL ≥ 10 µg/dL		Newly identified EIBLL			
				Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI Low	95% CI High
<b>Staten Island</b>	14,511	45	44	87	6.0	26	1.79	1.17	2.63
<i>Staten Island unknown or invalid ZIP code</i>	77	—	—	0	—	0	—	—	—
Port Richmond	2,754	51	49	41	14.9	11	3.99	1.99	7.15
South Beach - Tottenville	5,010	42	38	9	1.8	1	0.20	0.01	1.11
Stapleton - St. George	4,256	47	49	34	8.0	12	2.82	1.46	4.93
Willowbrook	2,414	43	42	3	1.2	2	0.83	0.10	2.99

(a) Test types: venous, capillary, unspecified.  
 (b) Elevated blood lead level was defined as a venous, capillary, or unspecified BLL ≥ 10 µg/dL.  
 (c) The Environmental Intervention Blood Lead Level (EIBLL) is defined as a venous BLL ≥ 15 µg/dL, consistent with Local Law 1.  
 (d) In this column, population counts used as the denominator for percent of children tested were calculated by summing NYC births 1998–2004. Data were obtained from the NYCDOHMH Office of Vital Statistics.  
 (e) In this column, population counts used as the denominator for the percent of children tested come from the US Census 2000.

**Table 5**

**Demographic and environmental profile of pregnant women newly identified with a BLL triggering case coordination services<sup>(a)</sup> (n=84): New York City, 2005.**

	Number	Percent		Number	Percent
<b>Total</b>	84	100%	<b>Country of birth</b>		
<b>Age at identification (years)</b>			United States	2	2.4%
Under 15 years old	1	1.2%	Mexico	48	57.1%
15–17 years old	0	0.0%	Bangladesh	10	11.9%
18–19 years old	9	10.7%	Ecuador	3	3.6%
20–24 years old	32	38.1%	Gambia	1	1.2%
25–29 years old	20	23.8%	Georgia	3	3.6%
30–34 years old	19	22.6%	Germany	1	1.2%
35–39 years old	3	3.6%	Guatemala	1	1.2%
40+ years old	0	0.0%	Guyana	1	1.2%
<b>Borough</b>			India	4	4.8%
Manhattan	12	14.3%	Morocco	2	2.4%
Bronx	12	14.3%	Nepal	1	1.2%
Brooklyn	17	20.2%	Pakistan	3	3.6%
Queens	42	50%	Russia	1	1.2%
Staten Island	1	1.2%	Unknown	3	3.6%
<b>Race/ethnicity</b>			<b>Primary language</b>		
Hispanic	55	65.5%	Spanish	55	65.5%
Non-Hispanic black	3	3.6%	English	10	11.9%
Non-Hispanic white	6	7.1%	Arabic	1	1.2%
Asian	16	19%	Bengali	7	8.3%
Other	4	4.8%	Georgian	2	2.4%
<b>Blood lead level at case assignment (<math>\mu\text{g}/\text{dL}</math>)</b>			Gujarati	1	1.2%
15–19	42	50%	Punjabi	3	3.6%
20–24	25	29.8%	Russian	1	1.2%
25–29	7	8.3%	Urdu	2	2.4%
30–34	3	3.6%	Unknown	2	2.4%
35–39	0	0.0%			
40–44	4	4.8%			
$\geq 45$	3	3.6%			

(a) Prior to August 2004, the blood lead level triggering case coordination services for pregnant women was defined as a BLL  $\geq 20 \mu\text{g}/\text{dL}$ . In August 2004, the blood lead level triggering case coordination services for pregnant women was lowered to  $15 \mu\text{g}/\text{dL}$  to correspond with the change in threshold for environmental intervention for children.

**Table 6****Neighborhood codes and their corresponding names, New York City.\***

	<b>Code</b>	<b>Neighborhood Name</b>
<b>Bronx</b>		
	BX1	Kingsbridge-Riverdale
	BX2	Northeast Bronx
	BX3	Fordham-Bronx Park
	BX4	Pelham-Throgs Neck
	BX5	Crotona-Tremont
	BX6	High Bridge-Morrisania
	BX7	Hunts Point-Mott Haven
<b>Brooklyn</b>		
	BK1	Greenpoint
	BK2	Williamsburg-Bushwick
	BK3	Downtown-Brooklyn Heights-Park Slope
	BK4	Bedford Stuyvesant-Crown Heights
	BK5	East New York
	BK6	Sunset Park
	BK7	Borough Park
	BK8	East Flatbush-Flatbush
	BK9	Canarsie-Flatlands
	BK10	Bensonhurst-Bay Ridge
	BK11	Coney Island-Sheepshead Bay
<b>Manhattan</b>		
	M1	Washington Heights-Inwood
	M2	Central Harlem-Morningside Heights
	M3	East Harlem
	M4	Upper West Side
	M5	Upper East Side
	M6	Chelsea-Clinton
	M7	Gramercy Park-Murray Hill
	M8	Greenwich Village-SoHo
	M9	Union Square-Lower East Side
	M10	Lower Manhattan
<b>Queens</b>		
	Q1	Long Island City-Astoria
	Q2	West Queens
	Q3	Flushing-Clearview
	Q4	Bayside-Little Neck
	Q5	Ridgewood-Forest Hills
	Q6	Fresh Meadows
	Q7	Southwest Queens
	Q8	Jamaica
	Q9	Southeast Queens
	Q10	Rockaway
<b>Staten Island</b>		
	S1	Port Richmond
	S2	Stapleton-St. George
	S3	Willowbrook
	S4	South Beach-Tottenville

\* United Hospital Fund (UHF) classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes.

## ***Call 311 for information.***

**Call 311 to:**

- **Report peeling paint or unsafe lead-based paint removal work.**
- **Get information on childhood or adult lead poisoning prevention.**
- **Find the nearest health care clinic to have your child tested for lead poisoning.**
- **Request a workshop about lead poisoning prevention for your organization or clients.**
- **Order educational materials on lead poisoning prevention.**



**Department of Health and Mental Hygiene  
The City of New York**

**Michael R. Bloomberg  
Mayor**

**Thomas R. Frieden, M.D., M.P.H.  
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