

Preventing Lead Poisoning
in
New York City

Annual Report 2001

New York City
Department of Health and Mental Hygiene

Lead Poisoning Prevention Program

Annual Report 2001



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Contents

Executive Summary	<i>5</i>
Childhood Lead Poisoning in New York City, 2001	<i>7</i>
Profile of Lead-Poisoned Children in New York City, 2001	<i>13</i>
NYC's Lead Poisoning Prevention Program in 2001	<i>18</i>
Appendix	<i>25</i>

Figures

Figure 1	Steady Decline in Number of Lead-Poisoned Children	8
Figure 2	Dramatic Reduction in Severe Cases of Lead Poisoning	9
Figure 3	Steady Decrease in Children with Blood Lead Levels in the Environmental Intervention Category	11
Figure 4	Most Children Are Tested for Lead Poisoning At Least Once By Age 3	12
Figure 5	More Than Half Were Tested for Lead Poisoning at 1 and 2 Years of Age in 2001	12
Figure 6	Black and Asian Children Are Over-Represented in the Environmental Intervention Category	14
Figure 7	Brooklyn Children Are Over-Represented Among Children in the Environmental Intervention Category	15
Figure 8	EIBLL Case Rates Were Higher in Particular Neighborhoods	16
Figure 9	EIBLL Case Rates Were Higher in Particular ZIP Codes	17

Tables

Table A-1	New York City intervention protocols for lead-poisoned children	25
Table A-2	Demographic and environmental profile of children newly identified with blood lead levels at or above the environmental intervention blood lead level: New York City, 2001. (N=653)	26
Table A-3	Numbers and rates of (1) children tested for lead poisoning, (2) children with elevated blood lead levels, and (3) children at or above the environmental intervention blood lead level, less than 18 years of age, by borough, and United Hospital Fund neighborhood: New York City, 2001.	28
Table A-4	Numbers and rates of (1) children tested for lead poisoning, (2) children with elevated blood lead levels, and (3) children at or above the environmental intervention blood lead level, ages 6 months to less than 6 years, by borough, and United Hospital Fund neighborhood: New York City, 2001.	30

Executive Summary

Significant Progress and Continuing Challenges

Lead poisoning is a preventable public health problem. Exposure to lead can result in long-lasting neurological damage that may be associated with learning and behavioral problems and with lowered intelligence.

The decline in cases of childhood lead poisoning has been a major success story in the U.S. and in New York City (NYC). In 1970, there were 2,649 children with blood lead levels ≥ 60 $\mu\text{g}/\text{dL}$. In 2001, only 6 children had blood lead levels ≥ 60 $\mu\text{g}/\text{dL}$. Yet, lead poisoning remains a significant public health problem in New York City.

Research has found that blood lead levels previously considered “safe” may be associated with learning problems and reduced intelligence. In NYC, children are now classified as “lead poisoned,” if their blood lead levels are 10 $\mu\text{g}/\text{dL}$ or higher. In 2001, 5,638 children less than 18 years of age were newly reported with blood lead levels in this category.

Improving rates of screening, particularly in populations at high risk for lead poisoning, remains a challenge. New York State requires that every child be screened for lead poisoning at least twice, at ages 1 and 2, but in 2001 only 62% of 1-year-olds and 55% of 2-year-olds were tested.

New York City’s Lead Poisoning Prevention Program

The goal of the Lead Poisoning Prevention Program (LPPP) of the NYC Department of Health and Mental Hygiene (DOHMH) is to prevent and control childhood lead poisoning by:

- Promoting early detection of lead poisoning through screening.
- Providing services for lead-poisoned children, their families, and their health-care providers.
- Promoting public and private action to prevent lead poisoning by reducing children’s exposure to lead hazards in the environment.

When the LPPP receives notification that a child has an elevated blood lead level, the program contacts the family and the health-care provider to encourage follow-up blood lead level monitoring and efforts to reduce exposure to lead. For children with blood lead levels at or above the Environmental Intervention Blood Lead Level, additional services include environmental assessment to identify lead exposure sources in the child’s environment and enforcement of NYC Health Code requirements that lead-based paint hazards be abated.

To *prevent* lead poisoning, the LPPP conducts surveillance and investigations to identify high-risk populations; targets education and outreach to

those high-risk groups; investigates complaints of lead-based paint work being conducted without mandated safety procedures; and collaborates with the NYC Department of Housing Preservation and Development (HPD) in efforts to reduce or eliminate lead-based paint hazards before children are poisoned.

Profile of Lead-Poisoned Children

Lead poisoning does not affect all communities equally. Pre-school children, Black children, and children living in certain low-income neighborhoods, particularly in Brooklyn, are disproportionately affected.

Of the 5,638 NYC children less than 18 years of age who were newly identified in 2001 with blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$, nearly half were less than 3 years of age. Twelve percent of lead-poisoned children (653 children) had blood lead levels at or above the Environmental Intervention Blood Lead Level, a BLL ≥ 20 $\mu\text{g}/\text{dL}$ or two BLLs (taken at least 3 months apart) of 15–19 $\mu\text{g}/\text{dL}$.

Of the 653 children with blood lead levels at or above the Environmental Intervention Blood Lead Level:

- 95% were Black, Hispanic or Asian.

- More than half lived in just 10 of 42 neighborhoods in NYC.
- 68% had visible lead-based paint hazards in their homes or supplementary addresses.

Strategies for Continued Progress

Elimination of lead poisoning in NYC by 2010 depends on:

- Early identification of children with elevated blood lead levels and rapid environmental intervention to reduce exposure.
- Targeting of primary-prevention initiatives, including education and environmental lead-reduction efforts, to neighborhoods with persistently high rates of poisoning.
- Development of new initiatives to prevent poisonings in which lead-based paint is not the source of exposure. This is particularly important for immigrant children and pregnant women, because poisoning not related to paint appears to be more prevalent in these groups.
- Active participation in lead poisoning prevention efforts by families, medical providers, landlords, community-based organizations, and government agencies.

Childhood Lead Poisoning

in New York City, 2001

Lead poisoning is a preventable public health problem. Exposure to lead can result in long-lasting neurological damage that may be associated with learning and behavioral problems and lowered intelligence.

Identification and removal of the sources of lead poisoning are the most important ways to prevent lead poisoning. Education of medical providers, housing personnel and the public is also crucial to preventing childhood lead poisoning. Early identification of lead-poisoned children through screening can assist in preventing additional exposure.

The Lead Poisoning Prevention Program (LPPP) of the New York City Department of Health and Mental Hygiene (DOHMH) was established in 1970. The program's goal is to prevent and control childhood lead poisoning by:

- Promoting early detection of lead poisoning through screening.

- Providing services for lead-poisoned children, their families, and their health-care providers.
- Promoting public and private activities that prevent lead poisoning by reducing children's exposure to lead hazards in the environment.

Significant Progress

The primary source of childhood lead poisoning in the United States is lead-based paint. Other sources include food, water, imported products, residual contamination from leaded gasoline, and perinatal exposure. Children from birth to the age of six years are most commonly affected.

The number of lead-poisoned children and the severity of poisonings have decreased significantly

throughout the United States and in New York City (NYC). This decrease can be attributed, in large part, to government regulations that have reduced lead in the environment by:

- Prohibiting the use of lead in gasoline, paint, and other consumer products.
- Requiring remediation of lead-based paint hazards in older housing.

- Promoting early identification of children with elevated blood lead levels (BLLs).

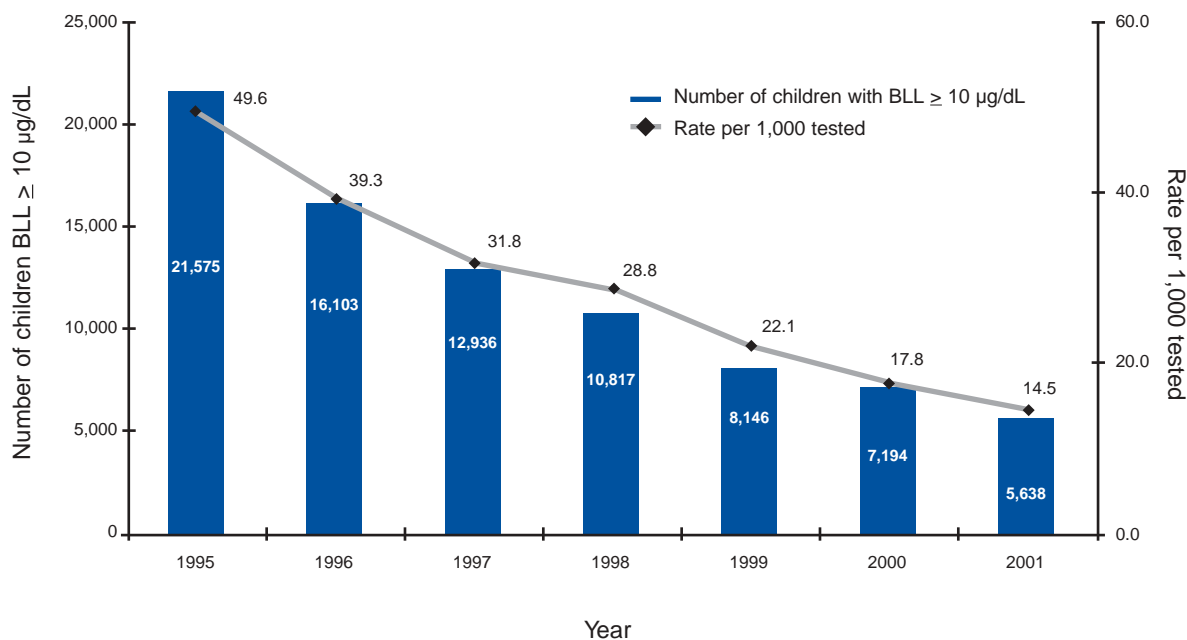
Fewer Lead-Poisoned Children

- There was a 74% decrease in the number of children newly identified with BLLs ≥ 10 $\mu\text{g}/\text{dL}$

between 1995 and 2001; 5,638 children less than 18 years of age in 2001 versus 21,575 in 1995 (see Figure 1).

- Only 1.5% of the children less than 18 years of age who were tested in 2001 had lead poisoning versus 5% in 1995 (see Figure 1).

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



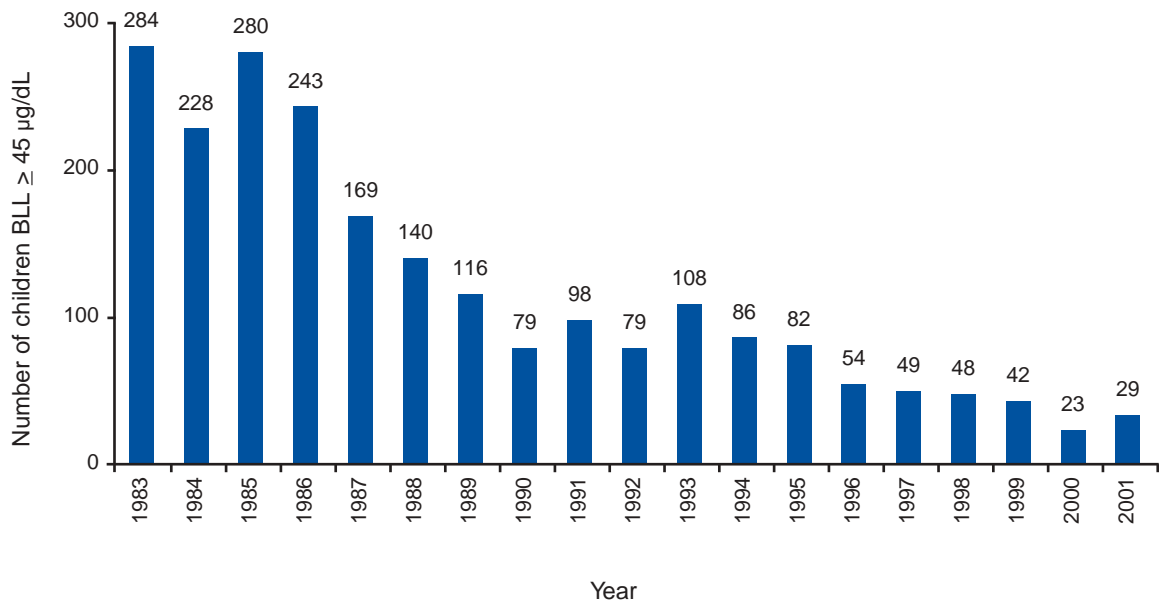
* Children, less than 18 years of age, newly identified with blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ (number and rate per 1,000 tested), by year, New York City, 1995–2001.

Fewer Severe Cases

Serious and life-threatening complications of lead poisoning—such as encephalopathy, coma, and convulsions, which are generally associated with BLLs of at least 70 $\mu\text{g}/\text{dL}$ —are now rare. Today, most lead-poisoned children do not have any clinical symptoms because their blood lead levels are < 45 $\mu\text{g}/\text{dL}$.

- Only 6 children less than 18 years of age were newly identified in 2001 with venous BLLs of at least 60 $\mu\text{g}/\text{dL}$ versus 2,649 children in 1970.
- There was a 90% decrease in children newly identified with venous BLLs $\geq 45 \mu\text{g}/\text{dL}$ between 1983 and 2001: 29 children less than 18 years of age in 2001 versus 284 in 1983 (see Figure 2).

Figure 2
Dramatic Reduction in Severe Cases of Lead Poisoning*



* Number of children, less than 18 years of age, newly identified with blood lead levels $\geq 45 \mu\text{g}/\text{dL}$, by year, New York City, 1983–2001.

Continuing Challenges

Childhood lead poisoning remains a significant public health problem in NYC despite the reduction in the rate and severity of lead poisoning cases. This is because research has found that BLLs previously considered “safe” may be associated with learning and behavioral problems and reduced intelligence.

In response to the ongoing research, the U.S. Centers for Disease Control and Prevention and the DOHMH have periodically reduced the BLL that defines an elevated blood lead level. Since 1992, the NYC Health Code has defined “lead poisoning” as a BLL equal to or greater than 10 micrograms of lead per deciliter of blood ($\geq 10 \mu\text{g}/\text{dL}$). This threshold is significantly lower than the 25 $\mu\text{g}/\text{dL}$ threshold that defined childhood lead poisoning from 1986 through 1992.¹

In 2001, 653 children (12% of the 5,638 new cases) had BLLs at or above the Environmental Intervention Blood Lead Level (EIBLL), defined by the LPPP as a BLL $\geq 20 \mu\text{g}/\text{dL}$ or two BLLs (taken at least 3 months apart), of 15–19 $\mu\text{g}/\text{dL}$. The number of children in the EIBLL group has been declining steadily (see Figure 3) but reducing the number further is a priority. The current protocols for intervention by the DOHMH to assist lead-poisoned children at specific blood lead levels are summarized in Table A-1 in the Appendix.

Controlling Lead-Based Paint Hazards and Identifying Non-Lead Based Sources of Contamination

Deteriorated lead-based paint has been recognized as the primary source of lead poisoning

in the U.S. Lead-based paint hazards are identified for the majority of lead-poisoned children in NYC.

However, the percent of lead-poisoned children in NYC for whom no visible lead-based paint hazard can be identified has increased in recent years.

- In 1997, the LPPP identified lead-based paint hazards in the primary residence or supplementary addresses² of 80% of the children newly identified in the EIBLL category.
- In 2001, lead-based paint hazards were found in the homes of 68% of the children with EIBLL, but no visible lead-based paint hazard was identified for 32% (see Appendix Table A-2).

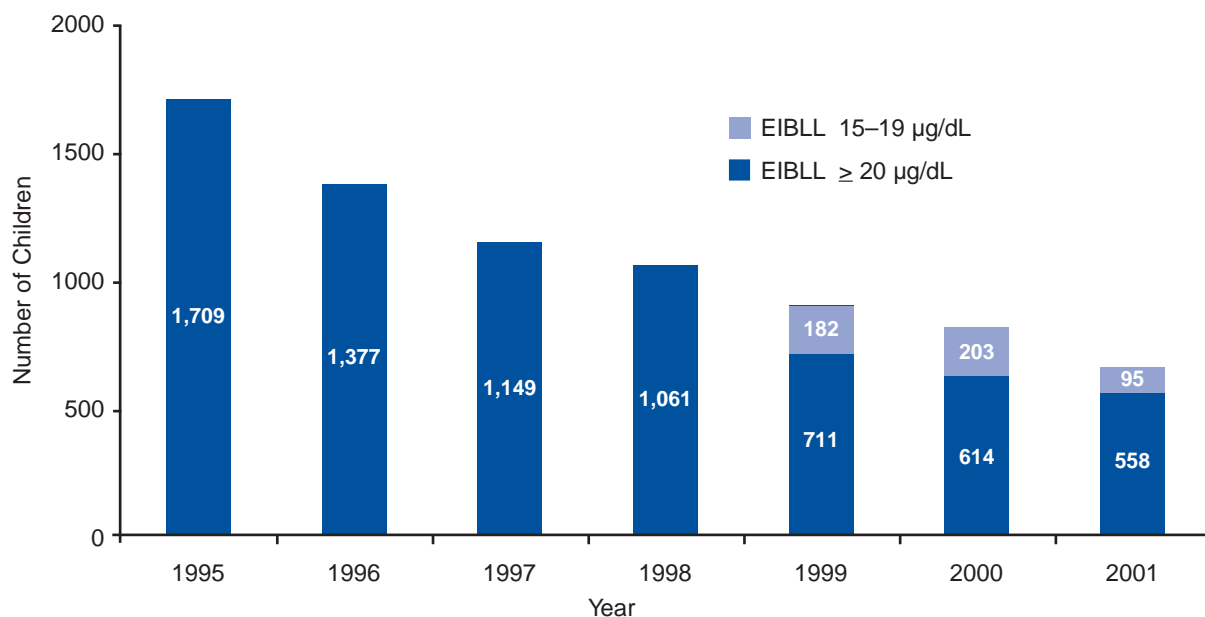
Sources of childhood exposure to lead, other than lead-based paint, include:

- Lead-contaminated household dust and soil.
- Residual contamination from leaded gasoline.
- Lead exposures associated with hobbies or jobs of family members.
- Food, spices, and non-food products (such as lead-glazed pottery and traditional medicinal remedies) that are contaminated with lead; often these are products imported and used by immigrant families.

In addition, children emigrating from countries where environmental contamination with lead is widespread may have been poisoned before their arrival in the U.S. The LPPP is conducting additional investigations of non-paint sources of lead exposure, particularly in immigrant communities.

Figure 3

Steady Decrease in Children with Blood Lead Levels in the Environmental Intervention Category*



* Number of children (less than 18 years) newly identified in the environmental intervention blood lead level category: New York City, 1995–2001. Since July 1999, the LPPP has defined the environmental intervention blood lead level as ≥ 20 $\mu\text{g/dL}$ or 2 blood lead levels 15–19 $\mu\text{g/dL}$ that were drawn at least 3 months apart where the second test was a venous sample.

Improving Screening

New York State law requires that every child be screened at 1 and 2 years of age and that children at high risk of poisoning due to lead hazards in their environment be screened, as needed, up to 6 years of age.³

Improving lead poisoning screening rates is a continuing challenge for the medical community and the LPPP. An estimated 83% of NYC children born in 1998 were tested for lead poisoning at least once before their third birthday but only 29% were screened twice by that age as required by New York State (see Figure 4). In 2001, only 62% of 1-year-

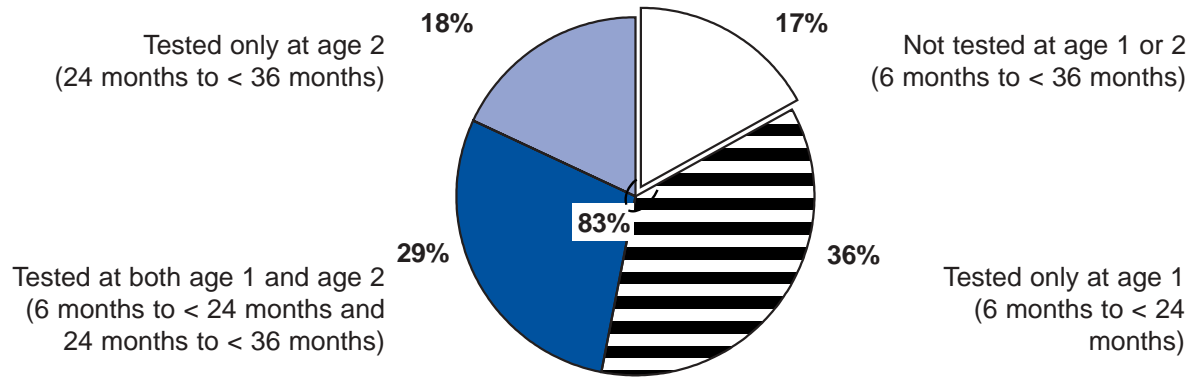
olds and 55% of 2-year-olds in NYC were tested (see Figure 5).

Identifying Lead-Poisoned Children

- Early detection of lead poisoning is critical; identifying lead-poisoned children makes it possible to protect them from additional exposure and more serious health effects.
- Because most lead-poisoned children do not have clinical symptoms, screening with a blood lead test is usually the only way to identify children with elevated blood lead levels.

Figure 4

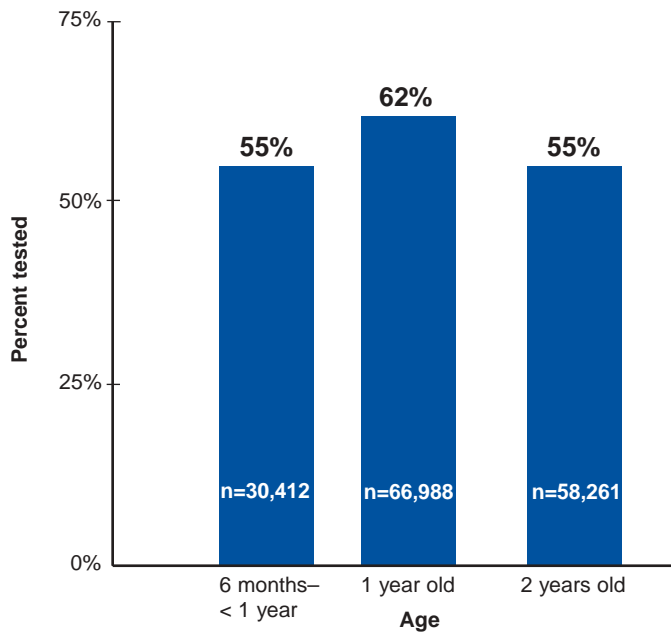
Most Children Are Tested for Lead Poisoning At Least Once By Age 3*



* Percent of children tested for lead poisoning before their third birthday: New York City, children born in 1998
Sources: NYS DOH Bureau of Biometrics and NYC DOHMH LPPP

Figure 5

More Than Half Were Tested for Lead Poisoning at 1 and 2 Years of Age in 2001**



**Number and percent of children (6 months up to 3 years) tested for lead poisoning, by age, New York City, 2001.
Sources: NYC DOHMH LPPP and US Census 2000

Profile of Lead-Poisoned Children

in New York City, 2001

Lead poisoning does not affect all New York City communities equally

Lead poisoning can affect children of all ages, races, and income groups. However, it does not affect all NYC communities equally and occurs most frequently in neighborhoods where many families have incomes below the poverty level and live in older buildings with deteriorated lead-based paint. Black children and toddlers are also disproportionately affected.

Older Housing and Poverty

Nationally, lead poisoning is associated with residence in housing built before 1950, when lead-based paint was widely used and generally contained a greater concentration of lead than in subsequent decades. The pattern of lead poisoning is similar in NYC.

In 2001

- In NYC, 55% of all dwelling units were built before 1950 but 82% of NYC children newly identified with blood lead levels at or above the EIBLL lived in apartments built before 1950 (see Appendix Table A-2).

Poverty contributes to the risk of lead poisoning for children living in older housing, because sub-standard maintenance by some building owners may result in deterioration of

painted surfaces and subsequent contamination of rooms with lead dust and paint chips. Nationally, among children 1–5 years of age living in older housing, those in low-income families were 4 times more likely to have blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ than children in middle-income households.⁴

Age

Young children, especially those between the ages of 6 months and 3 years, are at greatest risk for lead poisoning. These toddlers are more likely to ingest lead because they frequently put their hands and toys in their mouths and may lick or chew painted surfaces such as window sills. Research also suggests that children under 2 years of age may be particularly sensitive to the harmful effects of lead.

In 2001

- 45% of NYC children who were newly identified with blood lead levels at or above the EIBLL were 1- and 2-year-olds (see Appendix Table A-2).

Race/Ethnicity

Nationally, Black children have been disproportionately affected by lead poisoning. This also is the pattern in New York City.

In 2001

- Non-Hispanic Blacks constituted 29% of all NYC children less than 18 years of age (see Figure 6) but 42% of children in the EIBLL group were non-Hispanic Blacks.

The disproportionate impact of lead poisoning on minority children in NYC is also reflected in the following statistics:

In 2001

- Non-Hispanic Whites constituted 23% of New York’s children less than 18 years of age but

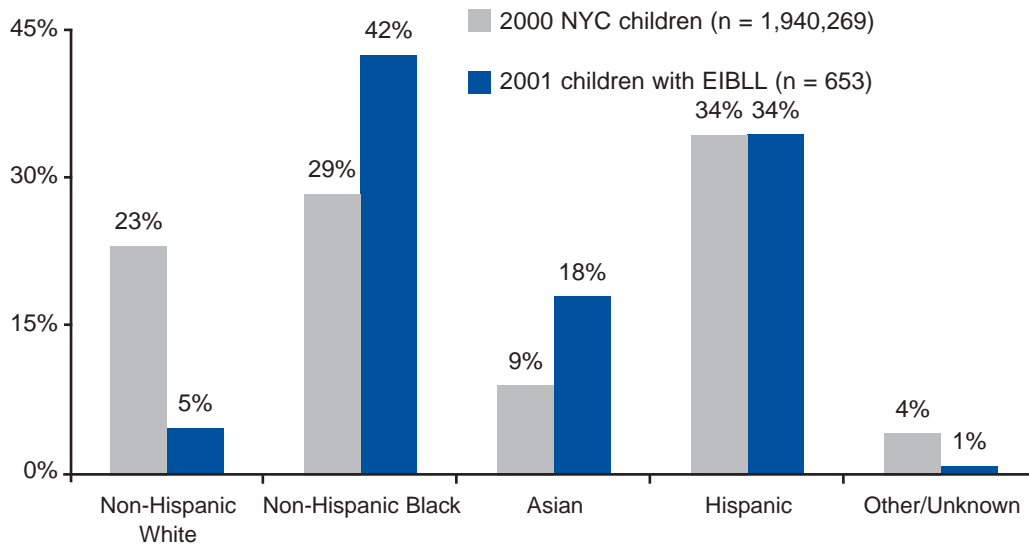
made up only 5% of the EIBLL group; 95% of the lead-poisoned children in the EIBLL group were Black, Hispanic, or Asian.

- Asian children comprised 9% of the less than-18 age group in the NYC population but 18% of the EIBLL group (see Figure 6). Asian children in the EIBLL group were primarily from Pakistan, India, or Bangladesh.

The racial and ethnic distribution of lead poisoning probably reflects the fact that children of color in NYC are more likely than White children to be living in poverty.

Figure 6

Black and Asian Children Are Over-Represented in the Environmental Intervention Category*



* Distribution of children, less than 18 years of age in (1) the population and (2) the environmental intervention category, by race/ethnicity: New York City, 2001. Sources: US Census 2000 and NYC DOHMH LPPP

Borough

Brooklyn children are disproportionately represented in the EIBLL caseload.

In 2001

- 34% of NYC's children resided in Brooklyn but 43% of children less than 18 years of age newly identified in the EIBLL group lived there (see Figure 7 and Appendix Table A-2).

Between 2000 and 2001, the number of EIBLL cases declined 20% from 817 to 653, citywide. In the Bronx, however, the number of cases increased—from 118 to 133—although the Bronx case rate remained below the citywide average. The LPPP will monitor surveillance data from the Bronx over the next year to determine if the increase in cases continues and to identify possible factors associated with the trend.

Neighborhood

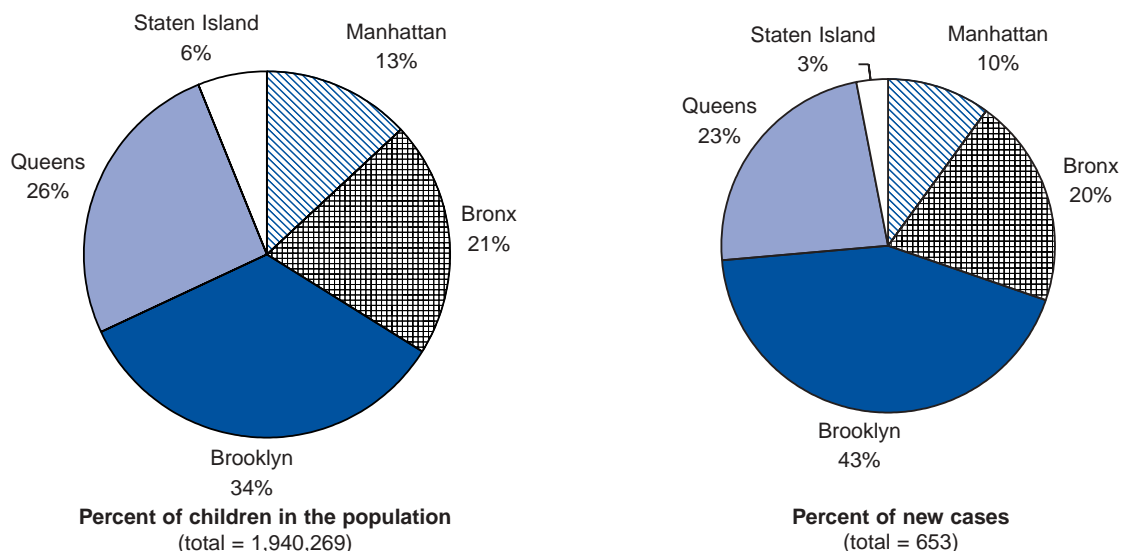
In 2001, as in previous years, EIBLL cases were concentrated in certain neighborhoods, most of which had substantial low-income populations.

More than half of the newly-identified EIBLL children lived in just 10 out of 42 NYC neighborhoods;⁵ 5 of these neighborhoods were in Brooklyn, 3 were in Queens, and 2 were in the Bronx⁶ (see Figure 8).

Six of the 10 neighborhoods have been among the neighborhoods hardest hit by lead poisoning, as measured by case rates, since 1995. They are: Bedford Stuyvesant/Crown Heights, East New York, Williamsburg/Bushwick, and East Flatbush/Flatbush, in Brooklyn; Jamaica and Southwest Queens, in Queens. The distribution of EIBLL cases by ZIP code is displayed in Figure 9. (See Tables A-3 and A-4 for additional data by neighborhood.)

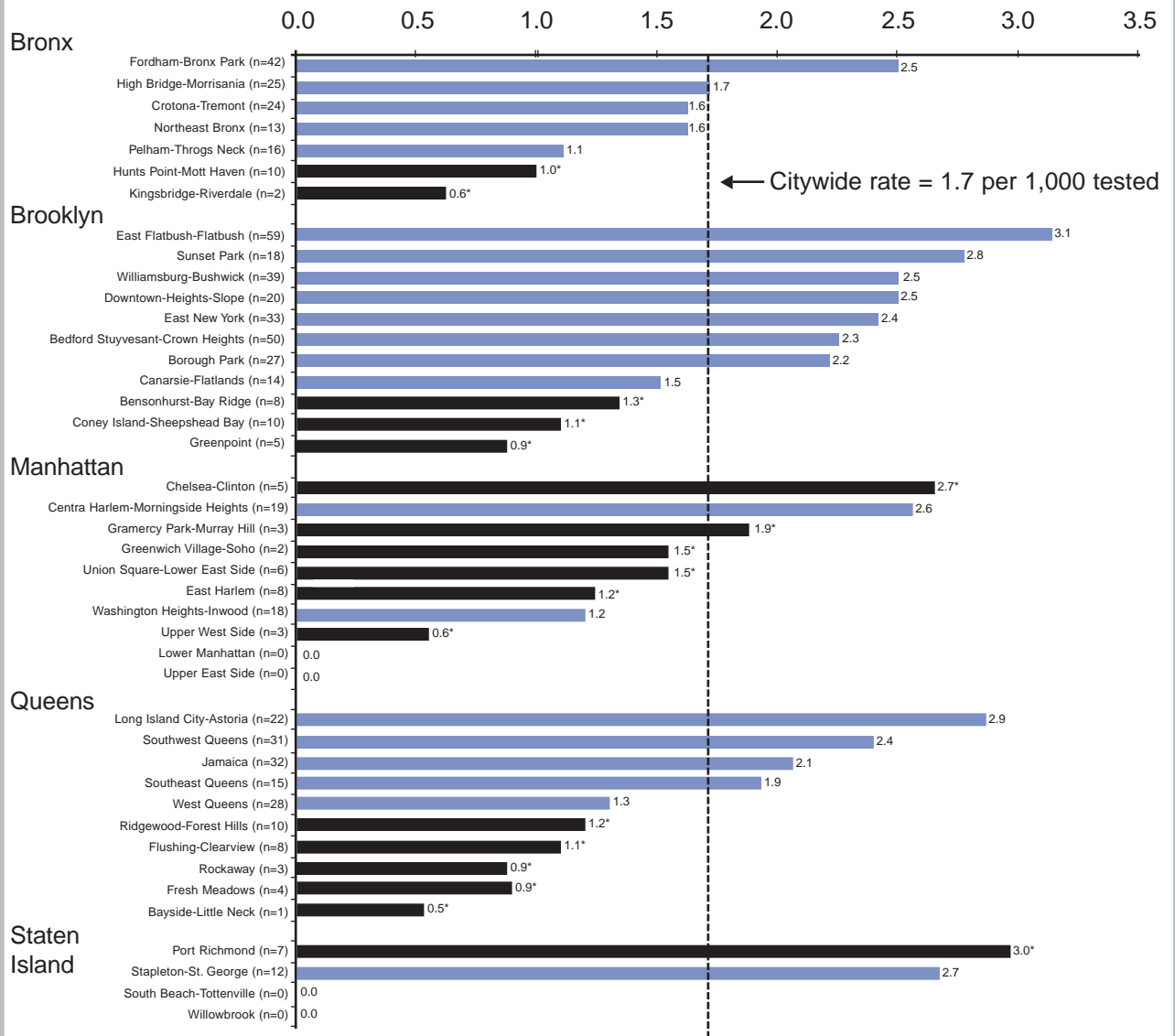
Figure 7

Brooklyn Children Are Over-Represented Among Children in the Environmental Intervention Category*



* Distribution of children less than 18 years of age in the population and in the environmental intervention category, by borough, New York City, 2001. Sources: US Census 2000 and NYC DOH LPPP

Figure 8
Environmental Intervention Category Case Rates Were Higher in Particular Neighborhoods[†]

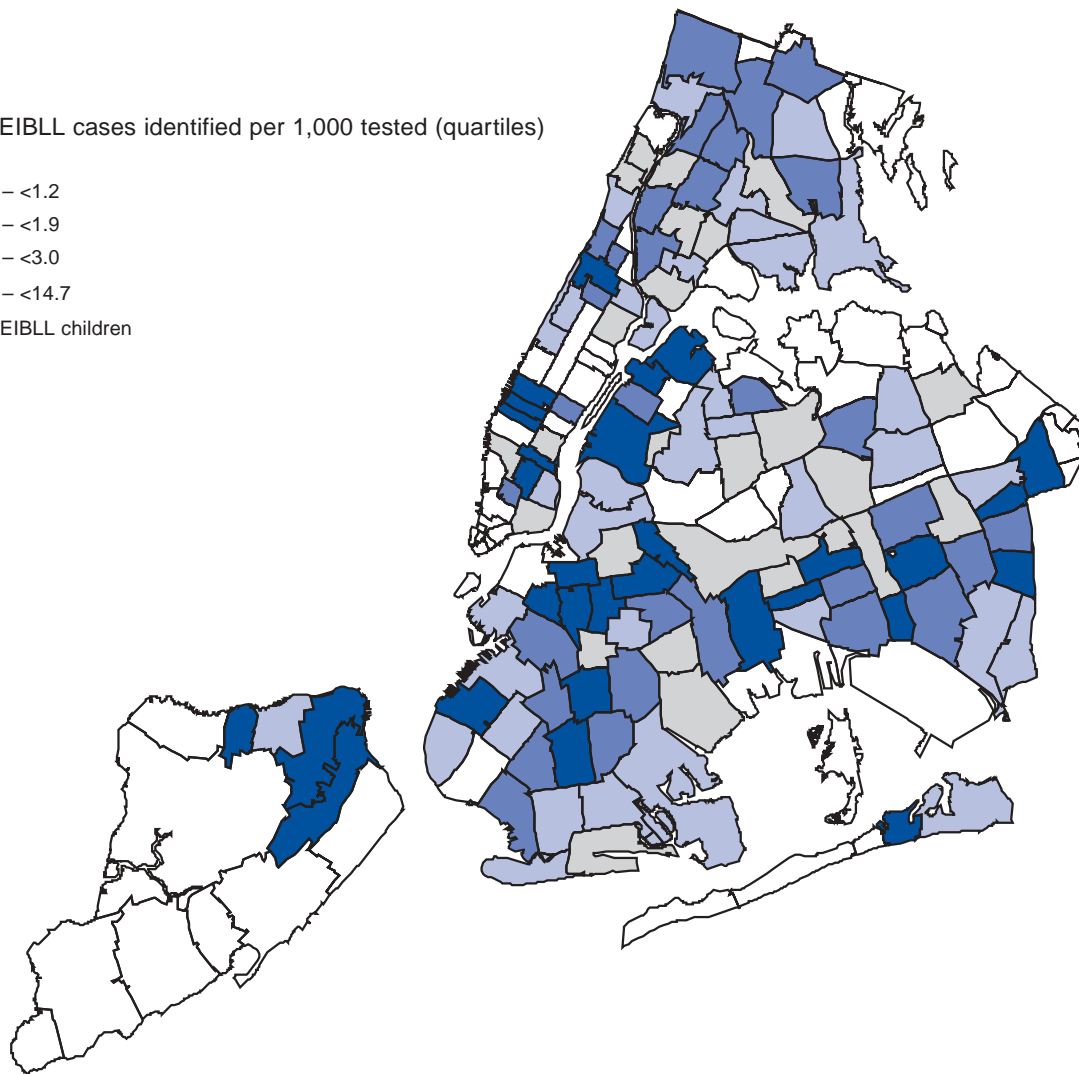
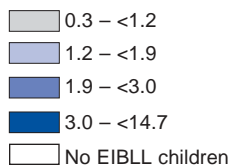


[†] Number of children less than 18 years of age newly identified at or above the environmental intervention blood lead level and rate per 1,000 tested, by United Hospital Fund Neighborhood (sorted highest to lowest rates within each borough): NYC, 2001

* Case rates in neighborhoods represented by black bars were less precise (relative standard error greater than 30%) due to the small numbers of cases. Caution should be used in interpreting these case rates.

Figure 9
Environmental Intervention Category Case Rates Were Higher in Particular ZIP Codes*

Rate of EIBLL cases identified per 1,000 tested (quartiles)



* Rates of children (less than 18 years of age) newly identified with environmental intervention blood lead levels (EIBLL), by ZIP code, New York City, 2001.

NYC's Lead Poisoning Prevention Program

in 2001

The Lead Poisoning Prevention Program (LPPP) has developed a pro-active, comprehensive approach to lead poisoning prevention and control that includes: public education and outreach to promote prevention and early detection; services for lead-poisoned children, their families, and their

health-care providers; special initiatives to encourage reduction of exposure to lead in the environment; and surveillance and investigation to identify high-risk groups and possible sources of lead exposure.

Educating Key Audiences

Citywide efforts to publicize the importance of blood lead screening and prevention of lead poisoning through exposure reduction are reinforced by active outreach to parents, health-care providers, community leaders, and building owners in communities with higher-than-average rates of lead poisoning.

In 2001, the LPPP:

- Responded to more than 2,300 calls to the LPPP hotline: 212-BAN-LEAD (212-226-5323).
- Disseminated more than 120,000 educational brochures about lead poisoning prevention and screening and the requirements of local laws in 9 languages: English, Bengali, Chinese, Creole, Korean, Polish, Russian, Spanish and Urdu. Brochures in English are available on the DOHMH website, www.nyc.gov/html/doh/html/lead/lead.html. For other languages, call 212-BAN-LEAD (212-226-5325).

- Educated more than 6,000 parents at WIC centers (Women, Infants and Children nutrition program), Head Start Centers, health fairs, and other events sponsored by community-based organizations in areas of the city with the oldest housing stock and the poorest families.
- Trained more than 60 community leaders to provide lead poisoning prevention education in their neighborhoods to families of high-risk children.
- Conducted fifteen dust-wipe training sessions for building owners, building superintendents, and/or contractors who are responsible for taking clearance dust-wipe samples after repairs of paint hazards ordered by the Department of Housing Preservation and Development (HPD).

To promote screening and proper management of lead-poisoned children by health-care providers, the LPPP:

- Provides information on screening and management of lead poisoning cases to health-care providers through hospital grand rounds and other lecture opportunities.
- Works with providers in the City's Medicaid Managed Care program to encourage compliance with federal regulations that require screening and follow-up services for lead-poisoned children on Medicaid.
- Distributes the November 1998 issue of *City Health Information (CHI)*, the DOHMH newsletter for health-care providers, which focuses entirely on lead poisoning and provides the U.S. Centers for Disease Control and Prevention's guidelines for lead poisoning

prevention, screening, and medical management. An updated edition will be available in 2003.

To improve outreach to high-risk families, the LPPP has developed a new program to systematically contact families that reside in apartments cited by the Department of Housing Preservation and Development for lead-paint violations. The families are encouraged to have their children tested for lead poisoning and are provided with information about lead poisoning prevention.

In 2001 (the first full year of this initiative):

- letters and educational materials were sent to 4,160 families.

Serving Lead-Poisoned Children

Environmental and other services provided by the LPPP for lead-poisoned children vary depending on the severity of the case as measured by the blood lead level.

For children with a BLL \geq 20 $\mu\text{g}/\text{dL}$ or 2 BLLs, at least 3 months apart, of 15–19 $\mu\text{g}/\text{dL}$

In 2001, 653 children newly identified in the EIBLL group received services that included:

- Contacting the child's family and medical provider to provide risk-reduction education and encourage BLL monitoring and appropriate medical management by the provider.

In 2001, 95–99% (depending on BLL) of families and providers of the newly-identified EIBLL children were contacted within 3 days of receipt of initial blood test results by the LPPP.

- Visiting the child's home to identify possible lead hazards through inspection and interview with parents/guardian.

In 2001, LPPP inspection staff made an initial visit within 7 days of receipt of initial blood test results for 95% of newly-identified EIBLL children.

- Requiring the building owner to eliminate any lead-based paint hazards identified.

In 2001, the LPPP issued abatement orders to owners of dwelling units occupied by 443 children in the EIBLL group.

- Conducting follow-up inspections to determine if lead-hazard remediation work is being done completely and on time.

In 2001, 4,105 follow-up inspections were conducted.

- Funding community-based organizations operating "safe house" units that provide families with temporary lead-safe housing

while repair work is done in their homes.

- Facilitating referral of lead-poisoned children for developmental assessment and early educational intervention, if appropriate.
- Providing one-on-one consultation for physicians treating lead-poisoned children.

In 2001, about 250 consultations were provided.

DOHMH intervention continues until lead-based paint hazards are abated and the child has a subsequent venous blood lead level below 15 µg/dL.

For children with BLLs of 10 µg/dL–19 µg/dL

In 2001, 4,985 children were newly identified with blood lead levels that were elevated but lower than the EIBLL. LPPP services included:

- Monitoring blood lead test results to determine if children were re-tested and if their blood lead levels were falling or rising.
- Communicating with parents/guardians and health-care providers regarding the need for follow-up blood testing and lead-exposure reduction.

Helping Lead-Poisoned Children and Their Families*

Ashley was 2 years old when the LPPP was notified that her blood lead level was 35 µg/dL. The LPPP immediately contacted Ashley's mother and doctor to discuss close monitoring of her blood lead level and testing of her siblings for lead poisoning. Next, the LPPP visited Ashley's home to inspect the apartment for lead-based paint hazards and to interview her mother about other possible sources of lead exposure. The inspector found areas of peeling paint on the ceilings and walls of the bedroom Ashley shared with her 2 sisters. An order was issued to the building owner to immediately repair the damaged surfaces. The inspector also provided Ashley's mother with information on lead poisoning prevention and follow-up care.

When the LPPP found that the building owner was not responding to the remediation order, the apartment was referred to the City's Emergency Repair Program, a program of the Department of Housing Preservation and Development (HPD), to abate the lead hazards. The LPPP also referred Ashley and her family to temporary "lead-safe housing" so the family could avoid any additional exposure to lead during remediation work. The LPPP continued to monitor Ashley's case until the damaged surfaces in her home were corrected and her blood lead level had dropped below 15 µg/dL.

*This description of a "typical" lead poisoning case is a composite of elements from a number of actual cases.

Monitoring Pregnant Lead Poisoned Women

Research has suggested that children born to women with elevated blood lead levels during their pregnancy may develop learning problems in later years.

Since 1993, New York State law has required that all pregnant women be assessed by providers of prenatal care for risk of lead exposure and receive a blood lead test if they are currently at risk.

In February 2001, the LPPP launched a new effort to provide education and enhanced follow-up services for pregnant, lead poisoned women and their newborns. LPPP staff work to identify possible environmental sources of lead exposure for each woman; this often includes visiting her home. LPPP also consults frequently with the woman's health-care provider to encourage monitoring of the woman's blood lead levels and testing of cord blood at the time of delivery. Children born with elevated blood lead levels are followed by the

LPPP's program for lead-poisoned children.

In 2001, 40 lead poisoned pregnant women with BLLs ≥ 20 $\mu\text{g}/\text{dL}$ received education and follow-up services. Of these:

- 95% were foreign born (50% of all NYC women giving birth in 2000 were foreign born).
- 60% were from Mexico.
- 20% reported eating dirt, clay, or crushed pottery during their current pregnancy.

Other pathways of lead exposure included consumption of imported foods and spices that contain lead and regular use of lead-glazed pottery in food preparation. None of the women were exposed to lead at work, even though occupational lead exposure accounts for 90–95% of adult lead poisoning in the U.S.

Preventing Poisoning By Reducing Lead-Based Paint Hazards

NYC's initiatives to reduce lead-based paint hazards include:

Preventive Lead-Based Paint Hazard Remediation

New York City has taken a more aggressive approach to lead poisoning prevention than most local governments. The City requires owners of multiple dwellings constructed before 1960 to inspect for and remediate lead-based paint hazards

in dwelling units housing children under 6 years of age, before children are lead poisoned and before owners are cited for violations. These requirements are enforced by the City's Department of Housing Preservation and Development (HPD).

The DOHMH also plays a role in preventive remediation of lead-based paint hazards through its work with lead-poisoned children. When the LPPP orders abatement of lead-based paint hazards in the apartments of children in the EIBLL group, the immediate goal is to protect those children (and

New York City's Lead Poisoning Prevention Laws

HEALTH CODE (sections 173.13, 173.14, 173.15)

The NYC Health Code, which is enforced by the Department of Health and Mental Hygiene (DOHMH):

- Authorizes the DOHMH to order abatement of lead-based paint hazards in the homes of lead-poisoned children.
- Requires the use of safe work practices during abatement.
- Requires dust-wipe clearance testing after abatement work is completed.
- Prohibits the removal of lead-based paint with heat guns, with torches, or by dry scraping.

ADMINISTRATIVE CODE of the City of New York (Article 14 of subchapter 2 of chapter 2 of Title 27)

Local Law 38, which is enforced by the NYC Department of Housing Preservation and Development (HPD), requires owners of multiple dwellings (3 or more apartments) built before 1960 to:

- Send an annual notice to all tenants asking if there is a child under 6 years of age in the apartment.
- Annually inspect units with resident children under 6 years of age for visible paint hazards.
- Correct paint hazards using safe work practices.
- Distribute a DOHMH educational pamphlet about keeping homes lead-safe.

their siblings) from additional exposure to lead. But the abatement also creates lead-safe housing for future occupants of the dwelling unit.

In 2001, 2,300 safety inspections were conducted either as part of the LPPP's monitoring of abatement work or in response to complaints.

Lead-Abatement Safety Regulations

The LPPP enforces NYC Health Code provisions (HC 173.14), regulating lead-based paint abatement work ordered by the DOHMH and, in some cases, by HPD. These safety requirements are designed to prevent lead poisoning by protecting family members and repair workers from unnecessary exposure to lead during remediation. The LPPP also responds to complaints of unsafe lead-based paint work (HC 173.15), regardless of whether the work was ordered by any government agency.

Federally-Funded Lead-Based Paint Hazard Reduction Program

With funding from the U.S. Department of Housing and Urban Development, the LPPP and HPD jointly conduct lead-hazard reduction programs in high-risk neighborhoods. Qualified building owners receive funding to make lead-based paint repairs. The LPPP educates the resident families, monitors the safety of the abatement work, and evaluates the effectiveness of the repairs in reducing the lead content of household dust.

Inspections for Tenants in Small Homes

One- and 2-family homes are not subject to the provisions of the Administrative Code that enable tenants in multiple dwellings to request an inspection of peeling paint by HPD. However, the

LPPP responds to complaints of peeling paint from tenants living in 1- and 2-family homes and orders abatement of lead hazards when appropriate.

In 2001, the LPPP conducted 71 inspections at 42 addresses in 1 and 2-family homes.

Surveillance and Investigation

Surveillance of blood lead levels and lead poisoning cases throughout the city is a critical function of the LPPP. Using a sophisticated computerized data management system, the LPPP tracks blood lead levels in all NYC children and

monitors its own delivery of services to lead-poisoned children. Surveillance data also are used to identify geographic and demographic patterns of lead poisoning in New York City and to develop appropriate interventions for high-risk groups.

Strategies for Continued Progress

Despite the dramatic reduction in the rate and severity of lead poisoning cases over the past 3 decades, lead poisoning remains a serious public health problem, particularly for children living in deteriorated housing in low-income communities where there is an increased risk of exposure to lead-based paint and paint dust.

Lead poisoning prevention must remain a public health priority. Continued progress depends on:

- Early identification of children with elevated blood lead levels and rapid environmental intervention to reduce exposure.
- Targeting of primary-prevention initiatives, including education and environmental lead-reduction efforts, to neighborhoods with

persistently high rates of poisoning.

- Development of new initiatives to prevent poisonings in which lead-based paint is not the source of exposure. This is particularly important for immigrant children and pregnant women, because poisoning not related to paint appears to be more prevalent in these groups.
- Active participation in lead-poisoning prevention efforts by families, medical providers, landlords, community-based organizations, and government agencies.

Effective implementation of this program can move New York City toward the goal of eliminating lead poisoning by 2010.

Endnotes

- ¹ In 1970, when the LPPP was established, lead poisoning was defined as a BLL of 60 µg/dL or greater; this threshold was reduced to 40 µg/dL in 1975, to 30 µg/dL in 1981, to 25 µg/dL in 1986, and to 10 µg/dL in 1992.
- ² LPPP considers a supplemental address to be a residential dwelling unit where a child spends more than 4 hours a day or 10 hours a week, or a school or organized day care facility.
- ³ 10 NYC RR 67-1.2 requires primary health-care providers — as part of routine well care for children aged 6–72 months, or at least annually — to provide parents/guardians with anticipatory guidance on lead poisoning prevention, to assess the risk of high-dose lead exposure, and to test children found to be at risk. Testing at ages 1 and 2 is mandated.
- ⁴ Pirkle JL, Kaufmann RB, Brody DJ, Hickman T, Gunter EW, Paschal DC. Exposure of the U.S. population to lead, 1991–1994. *Environ Health Perspect* 1998; 106 (11):745–50.
- ⁵ In this report, neighborhoods are defined according to those established by the United Hospital Fund, which has aggregated contiguous NYC ZIP codes into 42 neighborhoods for use in data analysis.
- ⁶ The ten communities were (1) Bedford Stuyvesant/Crown Heights (Brooklyn), (2) East New York (Brooklyn), (3) Williamsburg/Bushwick (Brooklyn), (4) East Flatbush/Flatbush (Brooklyn), (5) Borough Park (Brooklyn); (6) Jamaica (Queens), (7) Southwest Queens (Queens), (8) West Queens (Queens), (9) Fordham/Bronx Park (the Bronx), and (10) High Bridge-Morrisania (the Bronx).

Appendix

Table A-1

New York City intervention protocols for lead-poisoned children

Category	BLL ^(a)	Intervention
Elevated BLL	≥ 10 $\mu\text{g}/\text{dL}$ ^(b)	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 10–19 $\mu\text{g}/\text{dL}$ as well as those in the EIBLL group.
EIBLL ^(c)	≥ 20 $\mu\text{g}/\text{dL}$ or 2 BLLs ≥ 3 months apart of 15–19 $\mu\text{g}/\text{dL}$	Environmental assessment to identify exposure or sources; enforcement of lead-based paint hazard abatement requirements.

(a) Blood Lead Levels (BLLs) are measured in micrograms (μg) of lead per deciliter (dL) of blood.

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

(c) Environmental Intervention Blood 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 $\mu\text{g}/\text{dL}$ in 1992; children with persistent BLLs of 15–19 $\mu\text{g}/\text{dL}$ were included as of July 1999.

Table A-2

Demographic and environmental profile of children less than 18 years of age newly identified with blood lead levels at or above the environmental intervention blood lead level: New York City, 2001. (N=653)

		Number EIBLL^(a)	Percent of EIBLL	EIBLL Rate^(b) (number per 1,000 tested)
Age	Less than 6 months old	11	1.7%	4.7 ^(c)
	6 months to less than 1 year old	34	5.2%	1.1
	1 year old	161	24.7%	2.4
	2 years old	134	20.5%	2.3
	3 years old	86	13.2%	1.6
	4 years old	58	8.9%	1.0
	5 years old	51	7.8%	1.2
	6 to less than 18 years old	118	18.1%	1.5
Gender	Female	302	46.2%	1.7
	Male	351	53.8%	1.9
Borough	Manhattan	65	10.0%	1.1
	Bronx	133	20.4%	1.6
	Brooklyn	283	43.3%	2.1
	Queens	153	23.4%	1.6
	Staten Island	19	2.9%	1.2
Race/ethnicity	Hispanic	225	34.5%	
	Non-Hispanic Black	277	42.4%	
	Non-Hispanic White	30	4.6%	
	Asian	117	17.9%	
	American Indian	4	0.6%	
Blood lead level at case assignment ($\mu\text{g}/\text{dL}$)	15–19	95	14.5%	
	20–29	412	63.1%	
	30–39	102	15.6%	
	40–49	32	4.9%	
	50–59	6	0.9%	
	60–69	3	0.5%	
	70+	3	0.5%	
Year primary residence was built	on or before 1939	506	77.5%	
	1940–1949	26	4.0%	
	1950–1959	27	4.1%	
	1960–1969	34	5.2%	
	1970–present	19	2.9%	
	Unknown	41	6.3%	

Table A-2. (continued)

		Number EIBLL	Percent of EIBLL
Size of the building where the child resides	Building has less than 3 dwelling units	222	34.0%
	Building has 3 or more dwelling units	431	66.0%
Lead paint hazard identified at child's residence^(d)	No lead-based paint hazard identified	210	32.2%
	Lead-based paint hazard was identified	443	67.8%

- (a) Environmental intervention blood lead levels are defined as ≥ 20 $\mu\text{g}/\text{dL}$ or 2 blood lead levels 15–19 $\mu\text{g}/\text{dL}$ that were drawn at least 3 months apart where the second test was a venous sample.
- (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 infants tested were those most likely at highest risk for lead poisoning due to pre-natal exposure.
- (d) This included the child's primary residence and supplementary addresses where the child spent considerable periods of time.

Table A-3

Numbers and rates of (1) children tested for lead poisoning, (2) children with elevated blood lead levels, and (3) children at or above the environmental intervention blood lead level, less than 18 years of age, by borough, and United Hospital Fund neighborhood: New York City, 2001.

Children less than 18 years of age

United Hospital Fund Neighborhood	(1) Tests ^(a)		(2) Elevated blood lead levels ^(a)			(3) Environmental intervention blood lead levels (EIBLL) ^{(b)(c)}				
	Tested		Newly identified ≥ 10 $\mu\text{g}/\text{dL}$			Newly identified EIBLL				
	Number	Rate per 1,000 tested	Number	Rate per 1,000 tested	Number	Rate per 1,000 tested	95% CI Low	95% CI High		
New York City total	388,726	14.5	5,638	14.5	653	1.68	1.55	1.81		
NYC, unknown borough	46	—	121	—	0	—	—	—		
Bronx	85,297	12.1	1,034	12.1	132	1.55	1.29	1.83		
Bronx unknown or invalid ZIP code	3,419	2.3	8	2.3	0	—	—	—		
Kingsbridge-Riverdale	3,232	8.7	28	8.7	2	0.62	0.07	2.24		
Northeast Bronx	8,115	11.2	91	11.2	13	1.60	0.85	2.74		
Fordham-Bronx Park	16,826	13.3	223	13.3	42	2.50	1.80	3.37		
Pelham-Throgs Neck	14,440	13.6	197	13.6	16	1.11	0.63	1.80		
Crotona-Tremont	14,728	12.2	180	12.2	24	1.63	1.04	2.42		
High Bridge-Morrisania	14,545	13.2	192	13.2	25	1.72	1.11	2.54		
Hunts Point-Mott Haven	9,992	11.5	115	11.5	10	1.00	0.48	1.84		
Brooklyn	133,434	18.1	2,414	18.1	283	2.12	1.88	2.38		
Brooklyn unknown or invalid ZIP code	6,564	—	39	—	0	—	—	—		
Greenpoint	5,727	20.1	115	20.1	5	0.87	0.28	2.04		
Williamsburg-Bushwick	15,521	20.6	319	20.6	39	2.51	1.79	3.43		
Downtown-Brooklyn Heights-Park Slope	7,992	20.8	166	20.8	20	2.50	1.53	3.86		
Bedford Stuyvesant-Crown Heights	22,161	19.7	437	19.7	50	2.26	1.67	2.97		
East New York	13,653	17.1	233	17.1	33	2.42	1.66	3.39		
Sunset Park	6,492	20.6	134	20.6	18	2.77	1.64	4.38		
Borough Park	12,208	20.3	248	20.3	27	2.21	1.46	3.22		
East Flatbush-Flatbush	18,799	21.5	405	21.5	59	3.14	2.39	4.05		
Canarsie-Flatlands	9,227	9.9	91	9.9	14	1.52	0.83	2.55		
Bensonhurst-Bay Ridge	5,953	12.1	72	12.1	8	1.34	0.58	2.65		
Coney Island-Sheepshead Bay	9,137	17.0	155	17.0	10	1.09	0.52	2.01		

United Hospital Fund Neighborhood	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^{(b)(c)}			
	Tested		Newly identified ≥ 10 µg/dL		Newly identified EIBLL			
	Number	Rate per 1,000 tested	Number	Rate per 1,000 tested	Number	Rate per 1,000 tested	95% CI Low	95% CI High
Manhattan	58,277	14.2	828	14.2	64	1.10	0.85	1.40
Manhattan unknown or invalid ZIP code	9,837	—	37	—	0	—	—	—
Washington Heights-Inwood	15,066	12.4	187	12.4	18	1.19	0.71	1.89
Central Harlem-Morningside Heights	7,408	17.5	130	17.5	19	2.56	1.54	4.01
East Harlem	6,474	14.2	92	14.2	8	1.24	0.53	2.43
Upper West Side	5,475	15.2	83	15.2	3	0.55	0.11	1.60
Upper East Side	4,380	9.4	41	9.4	0	—	—	—
Chelsea-Clinton	1,884	29.7	56	29.7	5	2.65	0.86	6.19
Gramercy Park-Murray Hill	1,596	17.5	28	17.5	3	1.88	0.39	5.49
Greenwich Village-Soho	1,296	51.7	67	51.7	2	1.54	0.19	5.57
Union Square-Lower East Side	3,893	23.4	91	23.4	6	1.54	0.57	3.35
Lower Manhattan	968	16.5	16	16.5	0	—	—	—
Queens	96,162	12.7	1,217	12.7	154	1.60	1.36	1.87
Queens unknown or invalid ZIP code	5,881	—	36	—	0	—	—	—
Long Island City-Astoria	7,691	14.4	111	14.4	22	2.86	1.79	4.33
West Queens	21,441	15.3	329	15.3	28	1.31	0.87	1.89
Flushing-Clearview	6,997	6.4	45	6.4	8	1.14	0.49	2.25
Bayside-Little Neck	1,871	5.3	10	5.3	1	0.53	0.01	2.98
Ridgewood-Forest Hills	8,326	11.7	97	11.7	10	1.20	0.58	2.21
Fresh Meadows	3,232	8.7	28	8.7	3	0.93	0.19	2.71
Southwest Queens	12,917	15.3	198	15.3	31	2.40	1.63	3.41
Jamaica	15,473	13.5	209	13.5	32	2.07	1.41	2.92
Southeast Queens	7,764	12.4	96	12.4	15	1.93	1.08	3.19
Rockaway	4,569	12.7	58	12.7	4	0.88	0.24	2.24
Staten Island	15,511	9.3	145	9.3	19	1.23	0.74	1.92
Staten Island unknown or invalid ZIP code	203	—	1	—	0	—	—	—
Port Richmond	2,362	17.4	41	17.4	7	2.96	1.19	6.11
Stapleton-St. George	4,491	17.6	79	17.6	12	2.67	1.38	4.67
Willowbrook	2,591	3.9	10	3.9	0	—	—	—
South Beach-Tottenville	5,863	2.4	14	2.4	0	—	—	—

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

(b) Test types: venous.

(c) Environmental intervention blood lead levels are defined as ≥ 20 µg/dL or 2 blood lead levels 15–19 µg/dL that were drawn at least 3 months apart where the second test was a venous sample.

Table A-4

Numbers and rates of (1) children tested for lead poisoning, (2) children with elevated blood lead levels, and (3) children at or above the environmental intervention blood lead level, ages 6 months to less than 6 years, by borough, and United Hospital Fund neighborhood: New York City, 2001.

United Hospital Fund Neighborhood	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^{(b)(c)}				
	Number	When the population is Vital records ^(d) 2000 ^(e)	Newly identified ≥ 10 µg/dL		Newly identified EIBLL				
			Number	Rate per 1,000 tested	Number	Rate per 1,000 tested	Low	High	
New York City total	305,968	48	51	4,618	15.1	524	1.71	1.86	1.57
NYC, unknown borough	30	—	—	97	—	0	—	—	—
Bronx	65,622	54	53	833	12.7	103	1.57	1.90	1.28
Bronx unknown or invalid ZIP code	2,895	—	—	8	2.8	0	—	—	—
Kingsbridge-Riverdale	2,655	48	46	25	9.4	2	0.75	2.72	0.09
Northeast Bronx	6,361	56	46	80	12.6	11	1.73	3.09	0.86
Fordham-Bronx Park	12,999	52	52	187	14.4	33	2.54	3.57	1.75
Pelham-Throgs Neck	11,031	51	47	151	13.7	13	1.18	2.02	0.63
Crotona-Tremont	11,244	49	50	153	13.6	21	1.87	2.85	1.16
High Bridge-Morrisania	11,152	52	55	139	12.5	17	1.52	2.44	0.89
Hunts Point-Mott Haven	7,285	54	56	90	12.4	6	0.82	1.79	0.30
Brooklyn	102,717	47	51	1,997	19.4	222	2.16	2.46	1.88
Brooklyn unknown or invalid ZIP code	5,506	—	—	28	—	0	—	—	—
Greenpoint	4,515	34	39	101	22.4	4	0.89	2.27	0.24
Williamsburg-Bushwick	11,143	53	56	272	24.4	33	2.96	4.16	2.04
Downtown-Brooklyn Heights-Park Slope	6,173	38	45	153	24.8	18	2.92	4.61	1.73
Bedford Stuyvesant-Crown Heights	16,286	52	57	379	23.3	45	2.76	3.70	2.02
East New York	9,797	55	56	197	20.1	24	2.45	3.65	1.57

	(1) Tests ^(a)			(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^{(b)(c)}				
	Tested			Newly identified $\geq 10 \mu\text{g/dL}$		Newly identified EIBLL				
	Number	When the population is Vital records ^(d)	Census 2000 ^(e)	Number	Rate per 1,000 tested	Number	Rate per 1,000 tested	95% CI		
								Low	High	
United Hospital Fund Neighborhood										
Sunset Park	5,004	38	47	95	19.0	12	2.40	4.19	1.24	
Borough Park	10,144	31	34	201	19.8	22	2.17	3.28	1.36	
East Flatbush-Flatbush	14,594	49	55	305	20.9	43	2.95	3.97	2.13	
Canarsie-Flatlands	6,984	51	47	70	10.0	5	0.72	1.67	0.23	
Bensonhurst-Bay Ridge	4,927	37	41	58	11.8	7	1.42	2.93	0.57	
Coney Island-Sheepshead Bay	7,644	41	43	138	18.1	9	1.18	2.24	0.54	
Manhattan	47,713	45	59	719	15.1	52	1.09	1.43	0.82	
Manhattan unknown or invalid ZIP code	8,688	—	—	33	—	0	—	—	—	
Washington Heights-Inwood	11,333	43	55	158	13.9	16	1.41	2.29	0.81	
Central Harlem-Morningside Heights	5,868	46	51	116	19.8	14	2.39	4.00	1.30	
East Harlem	4,904	50	57	62	12.6	5	1.02	2.38	0.33	
Upper West Side	4,782	34	46	79	16.5	3	0.63	1.83	0.13	
Upper East Side	3,945	29	38	38	9.6	0	—	—	—	
Chelsea-Clinton	1,641	28	47	47	28.6	4	2.44	6.24	0.66	
Gramercy Park-Murray Hill	1,428	25	41	25	17.5	3	2.10	6.14	0.43	
Greenwich Village-Soho	1,113	30	40	60	53.9	2	1.80	6.49	0.22	
Union Square-Lower East Side	3,191	25	37	88	27.6	5	1.57	3.66	0.51	
Lower Manhattan	820	43	56	13	15.9	0	—	—	—	
Queens	76,865	49	49	952	12.4	129	1.68	1.98	1.40	
Queens unknown or invalid ZIP code	2,895	—	—	27	—	0	—	—	—	
Long Island City-Astoria	6,047	36	43	78	12.9	16	2.65	4.30	1.51	
West Queens	17,254	42	50	247	14.3	25	1.45	2.14	0.94	
Flushing-Clearview	5,959	41	38	37	6.2	8	1.34	2.65	0.58	
Bayside-Little Neck	1,602	51	33	7	4.4	1	0.62	3.48	0.02	
Ridgewood-Forest Hills	6,509	42	43	82	12.6	10	1.54	2.83	0.74	
Fresh Meadows	2,714	44	41	27	9.9	2	0.74	2.66	0.09	
Southwest Queens	10,141	49	48	151	14.9	24	2.37	3.52	1.52	
Jamaica	12,055	55	55	166	13.8	26	2.16	3.16	1.41	

Table A-4. (continued)

	(1) Tests ^(a)		(2) Elevated blood lead levels ^(a)		(3) Environmental intervention blood lead levels (EIBLL) ^{(b)(c)}			
	Number	When the population is Vital records ^(d) 2000 ^(e)	Newly identified ≥ 10 µg/dL		Number	Rate per 1,000 tested	95% CI	
			Number	Rate per 1,000 tested			Low	High
United Hospital Fund Neighborhood							Newly identified EIBLL	
Southeast Queens	6,056	42	78	12.9	13	2.15	3.67	1.14
Rockaway	3,718	40	52	14.0	4	1.08	2.75	0.29
Staten Island	13,021	39	117	9.0	18	1.38	2.18	0.82
Staten Island unknown or invalid ZIP code	175	—	1	—	0	—	—	—
Port Richmond	1,881	34	31	16.5	7	3.72	7.67	1.50
Stapleton-St. George	3,610	41	66	18.3	11	3.05	5.45	1.52
Willowbrook	2,210	39	7	3.2	0	—	—	—
South Beach-Tottenville	5,145	39	12	2.3	0	—	—	—

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

(b) Test types: venous.

(c) Environmental intervention blood lead levels are defined as ≥ 20 µg/dL or 2 blood lead levels 15–19 µg/dL that were drawn at least 3 months apart where the second test was a venous sample.

(d) In this column, population counts used as the denominator for percent of children tested were calculated from summing NYC births 1995–2000 (data from the NYC Department of Health Office of Vital Statistics). Vital records where also used in the Department's surveillance report published in July 2002: Surveillance of Childhood Blood Lead Levels in New York City. Thus, data in this column can be compared to Table 4 data in the July 2002 report.

(e) In this column, population counts used as the denominator for the percent of children tested come from the 2000 Census. Percentages of children tested reported in this document's narrative and figures are based on the 2000 Census.

Need Help or Information?

Call: 212-BAN-LEAD (212-226-5323)

With just one phone call you can:

- Get information on lead poisoning prevention or treatment;
- Find out how to report peeling paint or unsafe lead-based paint removal work;
- Sign up for free workshops for parents, health-care providers, building owners, and community leaders;
- Get information on early intervention services for children at risk for developmental delays or learning disabilities; and
- Arrange for an LPPP staff member to speak to your organization about 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.
Commissioner**