



# LEAD SAFETY TRENDS

Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

## Childhood Lead Poisoning in Boston

Boston has made significant progress reducing childhood lead poisoning. Chart 1 illustrates the dramatic decrease in the number of new cases of severe childhood lead poisonings, measured as a blood lead level (BLL) of greater than 25 mcg/dL (*i.e.*, 25 micrograms of lead per deciliter of blood). The combined programs of the city, state, and HUD have reduced an alarming 278 poisonings in 1992 to only 28 in 2001, a 90% reduction.

Similarly, education and abatement efforts have reduced the number of Boston children with elevated blood lead levels, measured as  $BLL \geq 10$  mcg/dL. In 1992, 4,338 of the children screened had elevated levels, in contrast to 1,123 in 2001, a 74% reduction.

Despite this progress, elevated blood lead levels remains a significant problem. The Mass. Childhood Lead Poisoning Prevention Program reported 1,350 cases of childhood elevated lead levels in Boston during calendar year 2000 and 1,123 new cases during calendar year 2001. The U.S. Center for Disease Control and Prevention calls 10 mcg/dL a "childhood lead exposure of concern," enough in children's bodies to slow normal growth and development and cause loss of intelligence, learning disabilities, hyperactivity, aggression and school failure.

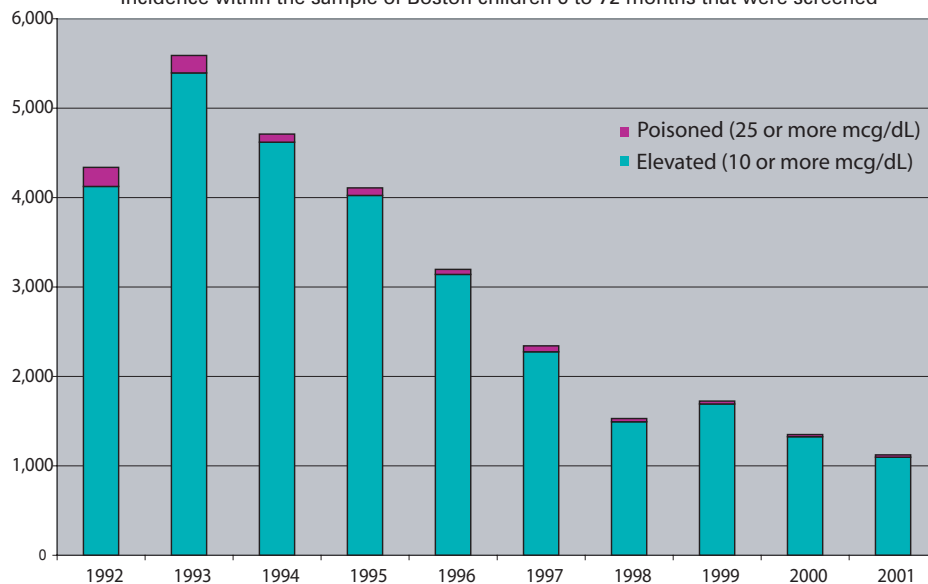
## Screening Process

Boston's aggressive lead abatement and lead poisoning education programs have continued to reduce the prevalence of elevated blood levels in children within the targeted age group. Like most cities nationwide, Boston does not annually screen 100% of the target population. However, the City has implemented successful screening programs. In 1999, the most recent year that detailed population data is available, the City screened 82% of children in the age range of 9 to 71 months. Furthermore, in the highest risk areas of the city, where annual screening concentrates on children between 9 and 48 months, the City

Chart 1

### Annual New Cases of Elevated Lead Levels & Lead Poisonings

Incidence within the sample of Boston children 6 to 72 months that were screened

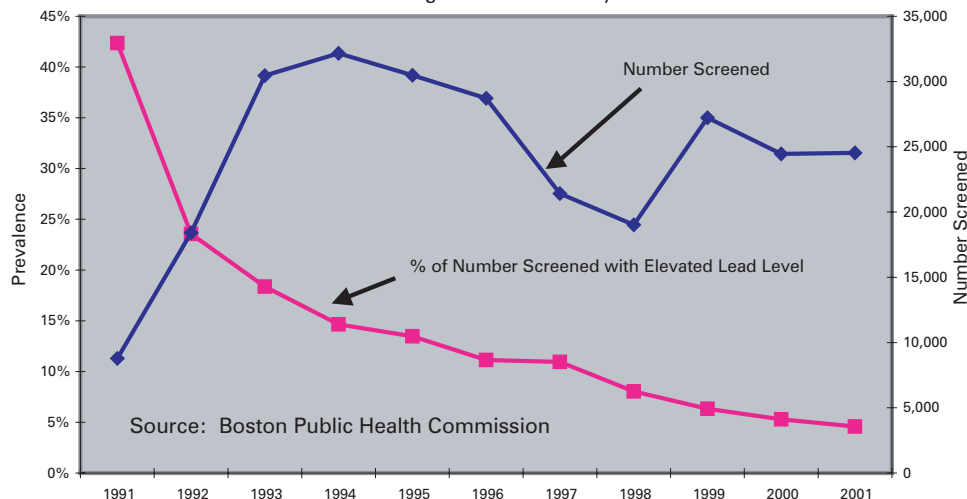


Source: Boston Childhood Lead Poisoning Prevention Program (CLPPP): Boston Public Health Commission

Chart 2

### Boston Blood Level Screening

Incidence of Elevated Lead Level ( $\geq 10$  mcg/dL) and Number Screened  
Children Aged 9 months to 6 years



Source: Boston Public Health Commission



# LEAD SAFETY TRENDS Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

has achieved a 92% screening rate from July 1996 to June 2001. This compares favorably to 23 other Massachusetts cities that have high risk areas. Boston has the fourth best screening rate average during this period. Statewide for all cities and towns, the average number of children screened during this five year period is 79%.

While not every child in the 9 to 71 month age group is annually screened, it is highly unlikely that any Boston child passes through this age range without ever being tested. Testing results are required for school admission and mandated when there is evidence of a problem. Still, it is important for parents to insure their children are tested annually. Recent studies are suggesting that even the lower levels of blood contamination can be harmful.

Table 1 details screening results in Boston over the past 10 years. The table shows that Boston has made tremendous progress reducing both lead poisoning and contamination. It should be noted, however, that when data is presented for the percent of population (e.g., % of Pop.), the population being reported is only the total number of children that were screened in the given year. The final column in Table 1 presents the actual number of children screened during that year. The actual number of Boston children age 9 to 71 months is greater

than the numbers cited here. Unfortunately, except in the years when a census is taken, officials can only estimate the number of children in this age range. The Census 2000 provides the most current

Boston children's population data. The census reports that there were 33,275 Boston children in 1999 in the age bracket of 9 to 71 months. Local medical professionals are commended for screening 27,219 children of this age

**Table 1**  
**Boston Childhood Blood Lead Levels: 1992 to 2001**

Age: 9 months to 71 months

Calendar Year	Elevated (>= 10)	% of Pop.	% of (15-19) Pop.	% of (20-24) Pop.	Poisoned (>= 25)	% of Pop.	Number Screened
1992	4,338	23.6%	633	3.4%	278	1.5%	18,412
1993	5,590	18.4%	717	2.4%	263	0.9%	30,454
1994	4,711	14.6%	509	1.6%	175	0.5%	32,166
1995	4,109	13.5%	418	1.4%	138	0.5%	30,475
1996	3,198	11.1%	312	1.1%	121	0.4%	28,719
1997	2,342	10.9%	290	1.4%	97	0.5%	21,411
1998	1,530	8.0%	192	1.0%	57	0.3%	19,019
1999	1,724	6.3%	194	0.7%	66	0.2%	27,219
2000	1,350	5.3%	153	0.6%	35	0.1%	25,453
2001	1,123	4.6%	101	0.4%	37	0.2%	24,537

Source: Boston Childhood Lead Poisoning Prevention Program: Boston Public Health Commission

**Table 2**  
**Number of Boston Children with Elevated (>= 10 mcg/dL) Blood Lead Levels**  
**Segmented by Neighborhoods**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Allston/Brighton	53	36	140	168	153	126	80	58	49	53	30
Back Bay	12	2	19	31	24	20	15	21	15	12	8
Charlestown	29	44	61	60	56	40	24	20	20	17	20
East Boston	224	236	354	272	239	143	121	65	89	66	73
Fenway	15	16	25	29	31	24	16	11	6	11	1
Hyde Park	142	167	207	197	197	158	77	73	79	72	60
Jamaica Plain	268	376	331	273	198	176	94	82	85	62	58
Mattapan	296	272	343	316	284	224	176	115	124	106	103
N.Dorchester	797	904	1308	1095	918	714	577	358	455	335	252
North End	1	1	6	8	10	8	7	1	4	5	6
Roslindale	201	224	275	225	221	151	80	69	67	65	69
Roxbury	585	628	579	424	374	310	231	122	137	102	96
S. Dorchester	839	1064	1525	1296	1118	872	687	438	485	345	268
South Boston	127	211	254	185	183	142	115	78	77	59	44
South End	86	56	67	55	42	44	16	14	15	15	9
West Roxbury	45	101	96	77	61	46	26	6	17	25	26
TOTAL	3,720	4,338	5,590	4,711	4,109	3,198	2,342	1,531	1,724	1,350	1,123



# LEAD SAFETY TRENDS

## Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

group in 1999, or 82%. However, 6,056 children in the key age group appear to have been missed in the 1999 screening.

Of the children in the screened group (i.e., 27, 219), 1,724 had elevated blood levels (i.e., BLL  $\geq$  10 mcg/dL), a percentage of 6.3%. Therefore, a mathematical assumption can be drawn that 6.3% of the children believed missed (6,056) or 383 have elevated blood levels that have gone unnoticed. While it is more likely that children not screened come from environments with extremely low incidence of lead paint, common sense dictates that parents should be diligent about testing.

### Prevalence of Lead Contamination by Neighborhood

Table 2 indicates the number of screened children, ages 9 months to 6 years old, found to have elevated blood lead levels in a given year. Because not every child in the age range is screened once a year, these statistics do not indicate the total number of children with elevated blood lead levels. Table 3 shows the prevalence of elevated blood lead levels in Boston's neighborhoods. The prevalence rates are the result of the number of screened children in each neighborhood with elevated levels divided by the total number of children screened in each neighborhood.

Aggregate numbers in Table 3 indicate that city and state efforts have succeeded in dramatically reducing the prevalence of elevated blood lead levels. The 1991 screening indicated that 42.4% of the City's children (9 months to 6 years) had elevated levels. In 2001, the prevalence level has been reduced to 4.6%.

**Table 3**  
**Prevalence Rate: Elevated Blood Lead Levels ( $\geq$  10mcg/dL)**  
**Segmented by Neighborhoods**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Allston/Brighton	39.26%	25.00%	12.05%	9.77%	8.96%	8.71%	8.47%	6.80%	3.55%	4.14%	3.04%
Back Bay	32.43%	8.00%	6.31%	6.87%	5.54%	4.62%	5.54%	5.92%	2.54%	2.26%	1.30%
Charlestown	17.79%	11.86%	7.62%	7.80%	6.75%	5.45%	4.94%	4.12%	2.74%	2.55%	2.73%
East Boston	38.36%	21.40%	13.52%	9.70%	8.16%	5.06%	4.73%	2.99%	2.18%	2.39%	2.53%
Fenway	22.39%	13.56%	6.65%	5.32%	5.60%	4.62%	4.88%	4.07%	1.66%	2.79%	0.26%
Hyde Park	34.72%	16.15%	13.06%	11.08%	11.35%	9.08%	6.92%	6.43%	4.81%	4.59%	4.18%
Jamaica Plain	33.09%	20.77%	16.63%	12.25%	10.46%	10.47%	8.65%	7.16%	5.31%	4.26%	4.31%
Mattapan	37.37%	20.45%	17.98%	16.39%	16.11%	13.42%	13.45%	9.81%	6.81%	6.29%	6.77%
N. Dorchester	59.48%	32.72%	25.39%	21.66%	19.36%	16.41%	16.27%	12.50%	10.92%	8.58%	6.88%
North End	10.00%	16.67%	6.45%	5.63%	7.94%	5.52%	8.24%	1.02%	2.61%	3.05%	2.17%
Roslindale	33.84%	14.23%	13.25%	10.05%	10.99%	8.10%	6.91%	5.79%	3.69%	3.86%	4.47%
Roxbury	37.57%	21.13%	16.87%	13.44%	12.71%	10.96%	11.22%	7.37%	5.96%	5.01%	4.65%
South Boston	36.71%	25.21%	16.93%	12.48%	13.29%	10.95%	10.94%	8.52%	7.14%	5.98%	4.24%
S. Dorchester	59.55%	34.82%	26.38%	21.98%	20.06%	15.87%	15.66%	12.11%	9.67%	7.65%	6.25%
South End	26.66%	12.42%	9.52%	6.42%	5.05%	5.69%	3.13%	2.77%	2.01%	1.85%	1.06%
West Roxbury	18.83%	12.35%	9.84%	6.90%	5.95%	5.02%	5.03%	1.02%	1.67%	2.44%	2.62%
All Screened Children											
with Elevated Level	3,720	4,338	5,590	4,711	4,109	3,198	2,342	1,531	1,724	1,350	1,123
Sum of Children											
Screened	8,787	18,412	30,454	32,166	30,475	28,719	21,411	19,019	27,219	24,453	24,536
Citywide											
Elevated Rate	42.4%	23.6%	18.4%	14.7%	13.5%	11.1%	10.9%	8.1%	6.3%	5.3%	4.6%

Source: Boston Childhood Lead Poisoning Prevention Program; Boston Public Health Commission



# LEAD SAFETY TRENDS

## Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

Map 1 depicts elevated blood lead levels by neighborhood. As indicated in Table 3 and Map 1, Dorchester and Mattapan are the neighborhoods with the highest prevalence of elevated blood lead levels. In both communities, nearly 7% of the screened population has an elevated BLL.

### Age of the Housing Stock

The age of Boston's housing stock is a major factor contributing to the risk of childhood poisoning. According to U.S. Census 2000 data, the City of Boston has 239,528 occupied housing units (see Table 4). It is estimated that 209,000 or 87% of these 239,528 housing units were built before 1978 the year when the use of lead paint was prohibited.

By convention, the Massachusetts Childhood Lead Poisoning Prevention Program (CLPPP) assesses the relative age of housing in communities by units built pre-1950. With 64% of housing built before 1950, Boston's rate is higher than the state's (47%) and much higher than the national rate of 23%. Today, only those dwellings built before 1978 are required to undergo lead paint inspection.

### Lead Prevention is the Law

The Massachusetts lead law (Chapter III, Sec 189-199) passed in 1971 with subsequent amendments affirms the seriousness of lead contamination. As amended, Section 460.050 states that "all children shall be screened once between the ages of nine months and 12

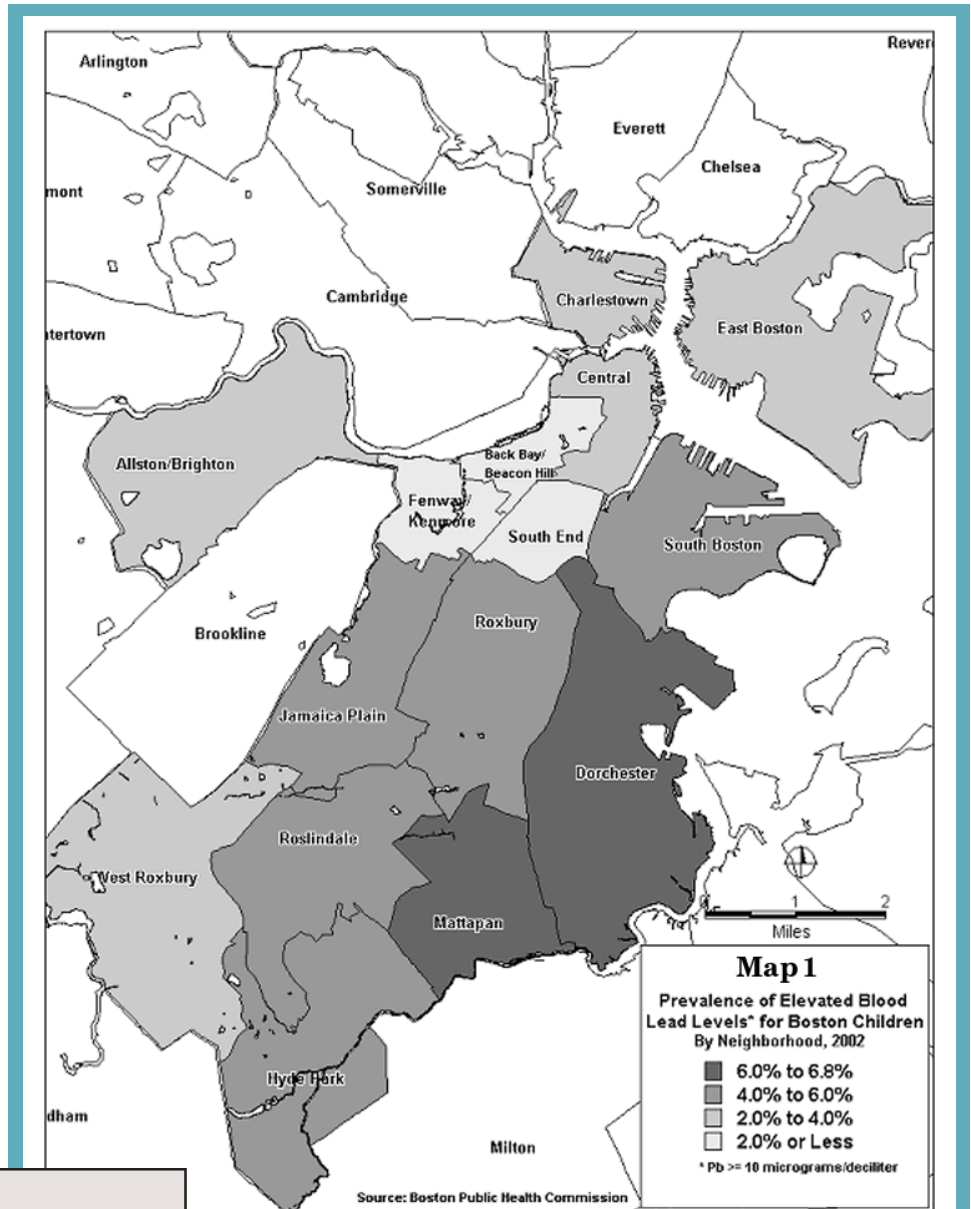


Table 4

### Boston Occupied Housing Units by Years Built

Year Built	Owner Occupied	Renter Occupied	Total Housing Units	% of Total
Pre-1950	55,821	96,596	152,417	63.63%
1950-1959	5,186	12,055	17,241	7.20%
1960-1969	5,094	16,755	21,849	9.12%
1970-1979	1,267	18,999	20,266	8.46%
1980 to 1988	2,760	11,179	13,939	5.82%
1989 to 1999	4,454	9,362	13,816	5.77%
Total	74,582	148,208	239,528	100%

Source: U.S. Census 2000

months, and again at ages two and three." Additional screenings are required for children in high risk cities, such as Boston. In high risk areas, "children identified as having a blood level of 10 mcg/dL or above shall be provided follow-up care, including repeat screening(s), in accordance with the current standards set forth by the American Academy of Pediatrics, or other qualified medical authority" [460.050 (D) (1)].

Chapter 111 of the General Laws amending the lead law mandates that "any examining physician, hospital, public health nurse or



# LEAD SAFETY TRENDS

## Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

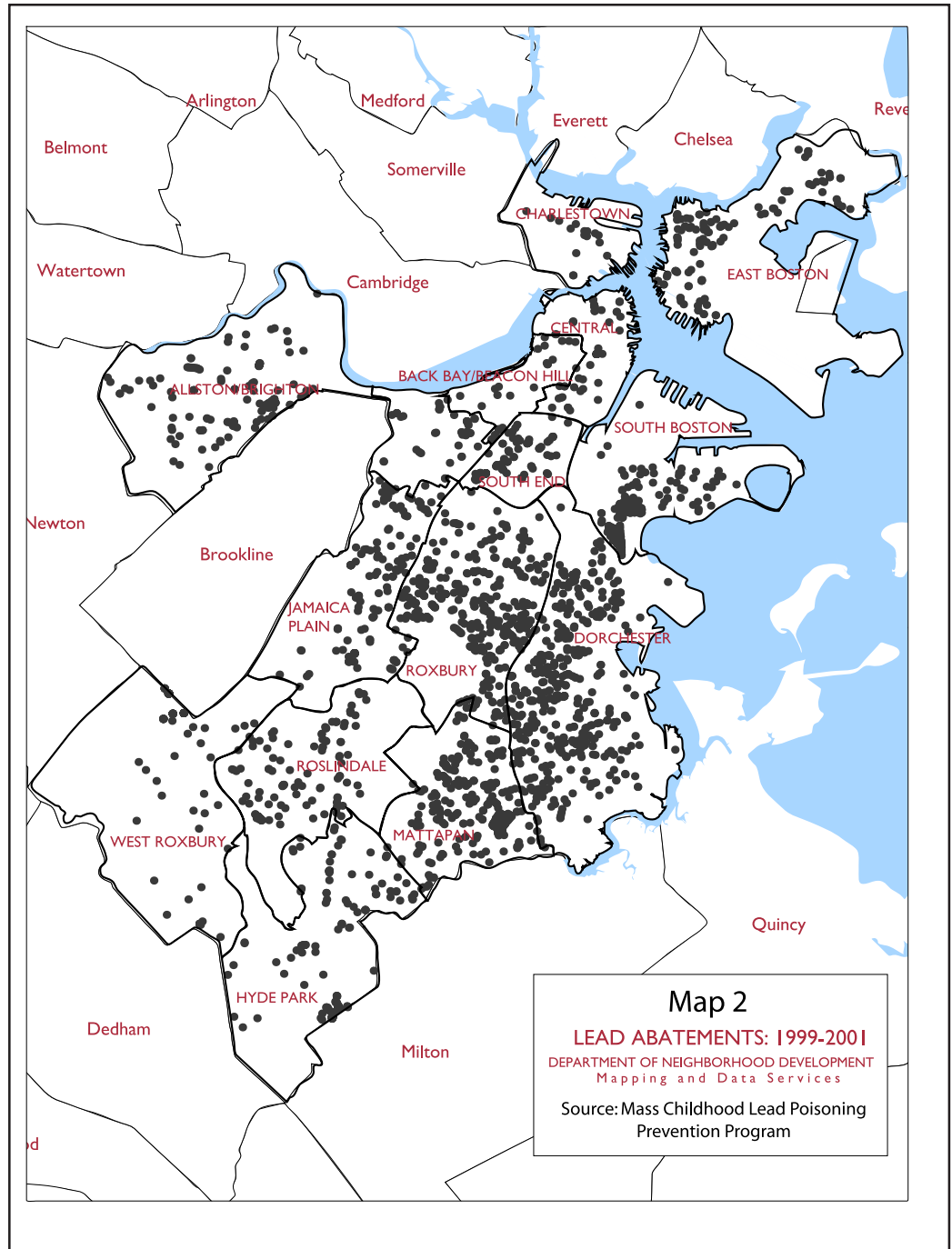
other diagnosing person or agency shall report to the director the existence and circumstances of each case of lead poisoning known to them and not previously reported” within three days (Section 111:191).

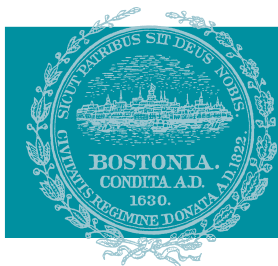
### Ramifications of a Lead Contamination Finding

Once an inspection identifies an unsafe lead paint situation in a housing unit, the owner is required to correct any violations if the unit has been occupied by a poisoned child within the past twelve months or is currently occupied by a child under six years old. It is illegal for a landlord to refuse to rent to a household with a child under 6 because the unit is non-compliant. Furthermore, it is the owner’s responsibility to relocate the tenants while the abatement process is occurring.

### Abatement Costs

Lead Safe Boston reports that the average range of abatement costs in Boston is \$8,000 to \$10,000 per housing unit. However, an inspection is essential for determining actual costs because of the array of variables involved including the extent of lead paint usage, the number and size of rooms, and the process used to abate the unit. In an effort to reduce the prevalence of lead contamination by reducing abatement costs, the Massachusetts Department of Public Health has created a program providing a one day moderate-risk deleading program for non-licensed property owners and their agents. For information, call CLPPP at (800) 532-9571 or go to its web site at [www.state.ma.us/dph/clppp](http://www.state.ma.us/dph/clppp).





# LEAD SAFETY TRENDS

Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

## Compliant Housing Units in Boston

Between 1991 and 2001, nearly 8,000 Boston units achieved compliance through the abatement process (Map 2). During the same period, an additional 7,983 housing units were found to be in compliance at the time of initial inspection (see Chart 3).

## Many Organizations Can Help

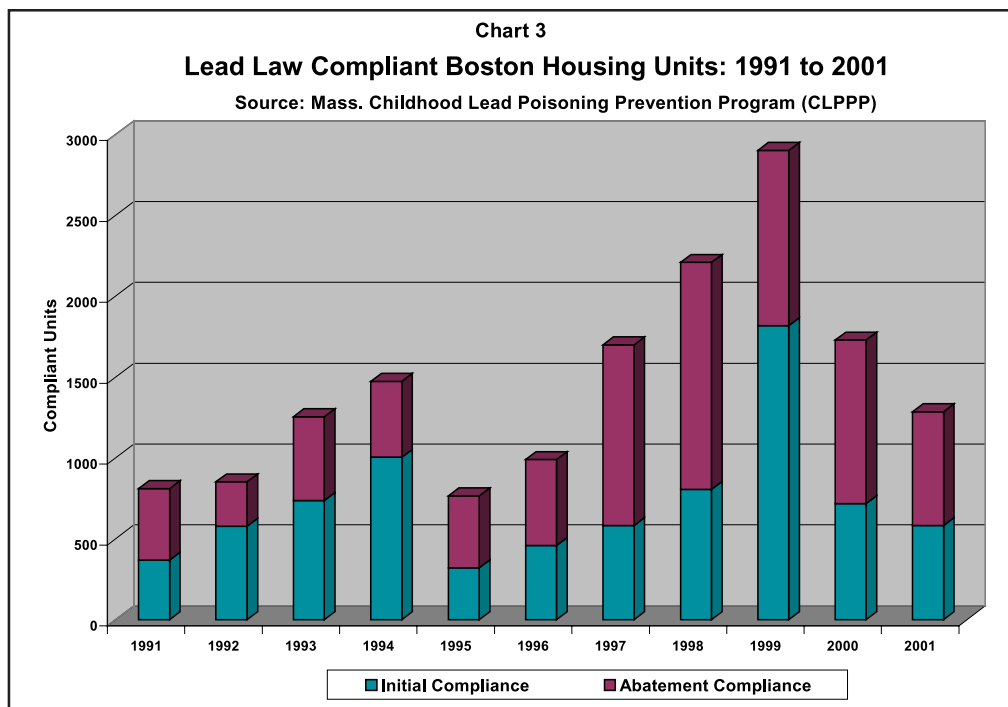
A variety of organizations that are ready to help Boston housing owners and tenants are listed below. Building owners may request a professional inspection through these organizations, which will help expedite the ultimate goal of an official statement of compliance that the unit is lead safe. Most participating organizations also provide low cost or interest free loans for the abatement process.

These organizations work cooperatively and can be expected to guide clients toward the best solutions. The property owner seeking assistance should have information about the following issues in order to receive the most focused assistance.

- **Ownership** - Is the owner an absentee investor (i.e., rental) or owner-occupant?
- **Occupants** - Does median income of owner and/or occupant meet qualifications? Does a child under the age of six live there?
- **Property Size** - Loan and grant programs typically support housing with 1 to 4 units.
- **Unit Age** - Inspections not required for properties constructed after 1978.

## The Lead Action Collaborative

The Lead Action Collaborative (LAC) is a partnership of non-profit organizations, foundations, and government agencies that has been working to substantially reduce the incidence of childhood lead poisoning in Boston's highest risk neighborhoods since 1993. LAC's multifaceted approach to combating lead poisoning includes increasing visibility, ensuring the effectiveness of related policies and regulations through advocacy and coalition building, and training community groups to develop and sustain their own outreach programs at the grassroots level. The Collaborative also facilitates networking on lead issues among grassroots organizations, non-profit groups, and public agencies. For further information, including the Collaborative's working blueprint document, go to [www.tufts.edu/tie/LAC/index.html](http://www.tufts.edu/tie/LAC/index.html) or call 617.627.4679.



**Table 5**  
**Boston Agencies for**  
**Lead Contamination Control**

**Boston Public Health Commission**  
617.534.2644

**MassHousing**  
[www.masshousing.com](http://www.masshousing.com)  
617.854.1000

**City of Boston: Dept. of Neighborhood Development**  
[http://www.cityofboston.gov/dnd/B\\_Lead\\_Safe\\_Information.asp](http://www.cityofboston.gov/dnd/B_Lead_Safe_Information.asp)  
617.635.0190

**Ecumenical Social Action Committee**  
<http://www.esacboston.org>  
617.524.2555

**Massachusetts Dept. of Public Health**  
<http://www.state.ma.us/dph/clppp/clppp.htm>  
617.284.8400

**Urban Edge**  
617.541.2595

**Dorchester Bay Economic Development Corporation**  
617.825.4200

**Bowdoin Street Health Center**  
617.825.9800



# LEAD SAFETY TRENDS

## Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

### Department of Neighborhood Development's "Lead Safe" Program

Since its inception in 1994, DND's "Lead Safe Boston" program has been responsible for abating 1,416 housing units, in a total of 593 projects (Chart 4). Most of these projects are financed through the MassHousing "Get the Lead Out" program or HUD lead abatement programs.

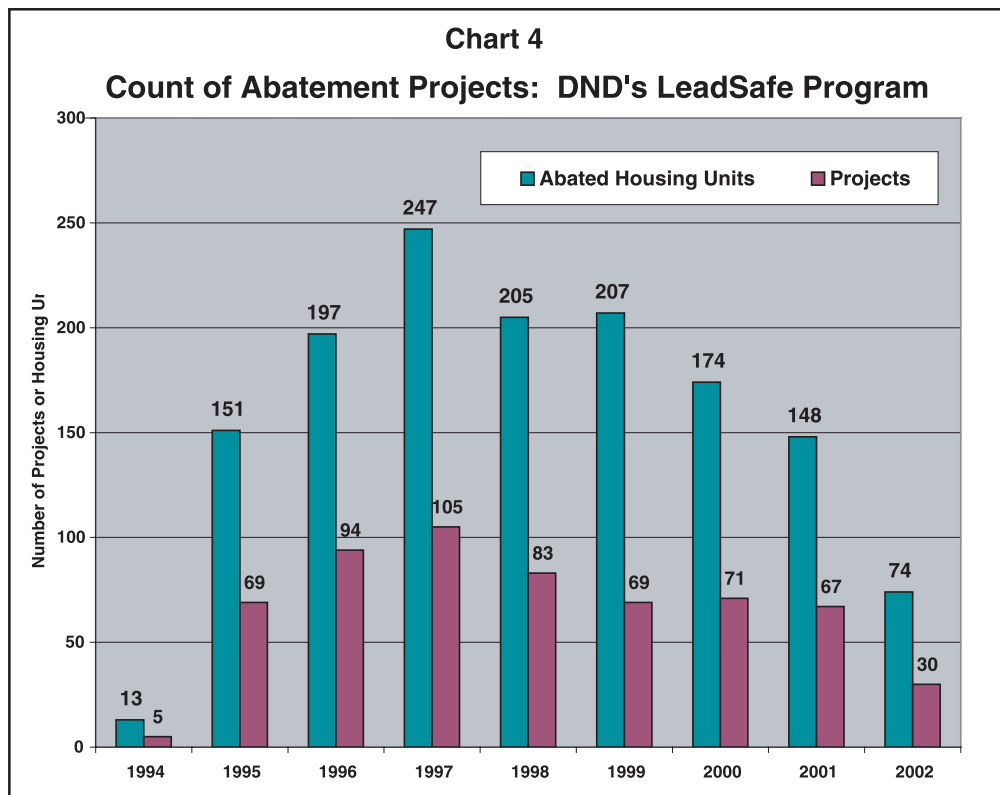
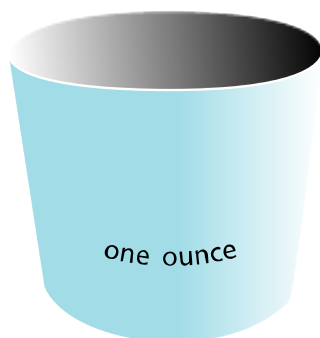
### Understanding the amount of lead that produces an elevated reading.

When blood lead levels are "elevated," how much lead are we talking about? Lead found in blood is measured in micrograms per deciliter, abbreviated as mcg/dL.

A micro-gram is one-millionth of a gram, a very small quantity. In common math, it can be written as 1/1,000,000 or 0.000001.

To get a real-world sense of the size of a dangerous lead amount, we also need to get a sense of the other measure in the notation or deciliter. A deciliter is one-tenth of a liter. The metric system liter is a measure of volume very similar to a liquid quart (i.e., 1 liter = 1.056 liquid quart). A deciliter has approximately the same volume as an ounce. The sketch of a cup in actual size depicts how much space is taken up by an ounce. To fill the cup with water (a reasonable substitute for blood) requires 28 million micrograms of water.

So, how much lead is indicated when screening shows an elevated blood level of 10 mcg/dL? Working with approximations, replace 10 of those 28,000,000 micrograms with lead. Because a deciliter is one-tenth of a liter, multiply these 10 mcgs by 10 getting the result that there are 100 micrograms per liter. Because the average sized 3 year old has approximately 1 liter of blood, all it takes is 100 micrograms of lead to produce an elevated level.



More than you needed to know? The important point is that a collection of lead particulates whose sum is no larger than a pin point can produce an elevated blood level.

### What's Mu?

Sometimes, we see mcg/dL written as  $\mu\text{g/dL}$ . Scientists and medical professionals often use the notation,  $\mu\text{g/dL}$ , with the Greek letter  $\mu$ , pronounced "mu." Like micro, the mu means one-millionth. Because non-scientists often cannot find the  $\mu$  on the keyboard, the plain letter u sometimes gets used. (Tip: in Microsoft Word, go to Insert \ Symbol and select the "Symbols" tab. Set the "subset" menu to Basic Greek and insert the  $\mu$ .)

### HUD Launches Lead Database & Website Project

The United States Department of Housing and Urban Development (HUD), through a Congressional earmark, has allocated funds for the development of a national web-based lead database as a tool in achieving the national goal of eliminating childhood lead poisoning by 2010. HUD has contracted with the National Center for Healthy Housing in Columbia, Maryland to provide a model database for three cities within the next two years. The project will pilot this system initially in Boston, Baltimore, and



# LEAD SAFETY TRENDS

## Boston

ISSUE 1 — SEPTEMBER 2002

City of Boston - Thomas M. Menino, Mayor - Department of Neighborhood Development

Chicago, as a model for the national lead database system. NCHH has partnered with Abt Associates in Cambridge, Massachusetts to do the technical development of the database system and website.

The project will develop and arrange for the maintenance of a national web-based lead database, with input from local data sources. The purposes of the database are to provide local, state, and federal government officials, public and private organizations, health care providers, and families with access to data and education to prevent childhood lead poisoning and to facilitate multidisciplinary collaboration to further childhood lead poisoning prevention efforts. Expected use and outcomes of the completed database are:

### City/state regulatory agencies

- Provide a mechanism for agencies to reach the public with integrated and regularly updated lead program data in an interactive format;
- Provide information or links to information on existing programs;
- Identify areas of highest risk so that programs can be better targeted; and
- Identify the extent to which additional actions may be needed to protect residents.

### General Public/Neighborhood Organizations

- Determine extent of known environmental lead problems in the neighborhoods that are served by their practice;
- Identify both housing in compliance with the law and at-risk housing in their neighborhood, including housing that has poisoned children but has no evidence of hazard remediation;
- Assist people who want to rent or buy property with a “real time” internet site providing property information by address;
- Improve targeted outreach and education efforts; and
- Find resources to meet current and potential owner needs, including availability of funding for lead hazard control work, information about tenant rights and owner responsibilities.

### Health Care Providers

- Provide “real time” information look up system about lead hazards in housing where children live or spend time;
- Identify and access appropriate educational materials focused on lead risks in a child’s home environment; and
- Determine the extent of known environmental lead problems in the neighborhoods served by their practice.

### City and Non-Profit Housing Agencies

- Provide look-up address-specific housing information;
- Determine availability of inspection information for individual properties;
- Evaluate efforts within service area; and
- Evaluate and better target available funding to areas of highest need.

During the balance of the two-year life of the project, the project team will complete the development and testing of the national and local components of the database system so that it will be fully operational by the end of year two. In addition, the project team will explore whether the database system could be expanded to include data on residential environmental hazards, including allergens and pollutants associated with respiratory diseases, including asthma. In Massachusetts, state and city officials, advocates, and health providers expressed an interest in having asthma data included in the Boston database.

### TRENDS ONLINE

To view this issue and other issues of TRENDS online, visit the Reports and Maps page of the Department of Neighborhood Development web site.

The web site address is:

[www.cityofboston.gov/dnd/U\\_Reports\\_and\\_Maps.asp](http://www.cityofboston.gov/dnd/U_Reports_and_Maps.asp).