



MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report 2015

MARYLAND CHILDHOOD LEAD REGISTRY

ANNUAL SURVEILLANCE REPORT 2015

EXECUTIVE SUMMARY

The Maryland Department of the Environment's Statewide Childhood Lead Registry (CLR) performs childhood blood lead surveillance for Maryland. The CLR receives the reports of all blood lead tests performed on Maryland children 0-18 years of age, and the CLR provides blood lead test results to the Department of Health and Mental Hygiene including Medicaid, local health departments as needed for case management, and upon request to third parties for research and planning.

Since 1995, the CLR has released a comprehensive annual report on Statewide childhood blood lead testing along with five "Supplementary Data Tables" which include a detailed breakdown of blood lead data by age, jurisdiction, blood lead level, incident and prevalent cases, and the trend of blood leads level over the years. This current report presents the childhood blood lead test results for calendar year (CY) 2015. All numbers are based on blood lead testing (venous or capillary) of children. The CLR does not receive any reports on lead screening based on the lead risk assessment questionnaire conducted at visits to the doctor. With few exceptions all numbers refer to children 0-72 months of age.

CY 2015 Surveillance Highlights:

- During CY 2015, a total of 127,730 blood lead tests from 120,962 children 0-18 years of age were received and processed by the CLR in 2015, of which 116,646 tests were from 110,217 children ages 0-72 months.
- A total of 110,217 (20.6%) children were tested of 535, 094 children 0-72 months of age, as identified in the 2010 Maryland Data Center, Maryland Department of Planning. This was an increase of 1,186 children tested compared to 109,031 (20.7%) during CY14. The estimated population of children 0-72 months of age increased from CY14 by a total of 7,790 children.
- Of those 110,217 children tested in CY15, a total of 377 (0.3%) were identified with a venous or capillary blood lead level ≥ 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) (Prevalent Cases). This was an increase of 22 children compared to 355 during CY14. Children identified with a first-time venous or capillary blood lead level ≥ 10 $\mu\text{g}/\text{dL}$ (Incident Cases) during CY15 totaled 280 (0.3%). This was an increase of 18 children with a new incidence case compared to 262 in CY14. New incident cases for children with a blood lead level of 5-9 $\mu\text{g}/\text{dL}$ decreased in 2015 (1,388) by 219 children compared to 2014 (1,607). It should be noted that the incidence and prevalence percentages remained the same in CY15 and the increase in numbers of blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ are attributed to the increase in the population tested.
- The new cases of blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ were heavily concentrated in Baltimore City, Prince George's, Montgomery, and Baltimore counties.

- Baltimore City had the highest testing rate for children 0-72 months (29.0%), followed by Somerset County (27.6%), Allegany County (25.2%), and Prince George’s County (24.4%).
- The highest blood lead testing of children one and two years of age was in Allegany County (68.2%) followed by Somerset County (59.8%), Baltimore City (54.8%), and Talbot County (54.3%).
- More than 90% of addresses were geocodable at the longitude, latitude level. The county assignment however is based on: 1) census tract as determined by geocoding, 2) child’s zip code address, and 3) the original county name if it was included in the address information.
- Address information including actual address data, address longitude and latitude, and address census block group were used to match the addresses with the address information in the Department of Assessment and Taxation real estate file to find and assign “year structure built.” Close to 85% of addresses were matched.
- In 2014, the Governor’s Task Force on Point Care Testing for Lead Poisoning recommended the use and expansion of Point of Care (hand-held lead analyzer) testing for lead. The recommendation increased the number of primary health care facilities that do in-office blood lead testing. In 2015 CLR received blood lead reports from 74 establishments (laboratories and/or clinics/medical offices) nationwide, a 35% increase compared to 2014. About 82% of the reports were received electronically from eight (8) establishments while 18% were received in hard copy through fax or mail from the other 66 establishments.
- The average reporting time, from the time the blood sample is drawn to the time the result enters the CLR database is about 6 days. The average time for receipt of elevated blood lead results (≥ 10 $\mu\text{g}/\text{dL}$) is approximately 30 hours.
- As of 2015, the State targeting plan of 2004 was in effect which required children to have a blood lead test at ages one and two years if they met following criteria:
 - a) Living in an indentified “at risk” zip code;
 - b) Participate in Maryland’s Medicaid Early Periodic Screening Diagnosis and Treatment Program; and
 - c) Give a positive response to the “Risk Assessment Questionnaire” conducted at regular medical checkup, up to six years of age.
- The revised State blood lead testing plan was finalized in 2015 and became effective on January 1, 2016. It recommends: “For a period of three years, all Maryland children under the age of 6 years should be tested for lead exposure at 12 and 24 months of age.”

Overview

While the prevalence and incidence of elevated blood lead levels in children in Maryland has declined dramatically over the years, there are still children with historically elevated blood lead levels and a number of children who are newly exposed to lead every year. Children are at the greatest risk from birth to age six while their neurological systems are being developed. Exposure to lead can cause long-term neurological damage that may be associated with learning and behavioral problems and with decreased intelligence.

There is no evidence of a blood lead level below which there are no health effects. The Centers for Disease Control and Prevention (CDC) concurs that the evidence shows that there is no threshold level for blood lead that can be considered “safe”. As evidence of adverse health effects were demonstrated at lower blood lead levels, the CDC reduced the level of blood lead which requires clinical case management. In March 2012, the CDC lowered its standard of blood lead level of ≥ 10 $\mu\text{g}/\text{dL}$ as the “Level of Concern” to 5 $\mu\text{g}/\text{dL}$ as the new “Reference Value”. State Agencies are working collaboratively to development new criteria for clinical case management with plans of implementation in CY 2016.

Statistical Report

In calendar year 2015, a total of 110,217 Maryland children 0-72 months of age were tested for lead exposure. Table One provides a summary of Statewide statistics for blood lead testing in 2015.

Findings

The extent and severity of childhood lead exposure in 2015 remained more or less consistent with 2014. The overall proportion of children with blood lead levels of 5-9 $\mu\text{g}/\text{dL}$ dropped (Figure One); however there were slight increases in both prevalence and incidence of blood lead level ≥ 10 $\mu\text{g}/\text{dL}$ (Figure Two.) The increase in the number of cases with blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ is more noticeable in Baltimore City, followed by Montgomery and Prince George’s counties (Table Two). These increases reflect the high number of cases involving immigrants and refugees that have relocated from the Middle East and Africa to the United States and have settled in the State of Maryland.

Table Two provides a breakdown of blood lead testing of children 0-72 months of age by jurisdiction in 2015. Appendix A provides the breakdown of blood lead testing and the status of children by age groups of 0-35 and 36-72 months of age by jurisdiction in 2015, and Appendix B provides summary

Sources of Childhood Lead Exposure

Lead dust from deteriorated lead paint continues to be the major source of exposure for children in Maryland. Out of estimated of 2,399,375 occupied residential houses in Maryland 437,441 (18.2%) were built before 1950 and 923,917 (38.5%) between 1950 and 1979. (Source: US Census Bureau, 2010-2014 American Community Survey, 5-Year Estimates) A significant number of pre-1950 and 1950-1979 residential rental units have been made lead free. Untreated units in those groupings are highly likely and likely to have lead-based paint respectively.

Water, air, and soil, may provide low-level, “background” exposure, but rarely may cause childhood lead poisoning.

Imported products, parental occupations, hobbies, and imported traditional medicines occasionally may cause lead exposure among children.

In-utero exposure to lead may affect fetal development. This can be of more significance among certain subgroup populations who may be more at risk of environmental lead exposure.

results for the past eight (8) years at the State, Baltimore City and county levels. A detailed breakdown of blood lead data is provided in the Supplementary Data Tables: Supplements 1-5.

Table One
Calendar Year (CY)
2015 Statistical Report¹

Item	Number	Percent (%)
Children 0-18 Years		
Number of tests	127,730	
Number of children	120,962	
Children 0-72 Months		
Number of tests	116,646	
Number of children	110,217	100.0
Age		
Under One	11,037	10.0
One Year	40,289	36.6
Two Years	31,364	28.5
Three Years	9,856	8.9
Four Years	10,369	9.4
Five Years	7,302	6.6
Sex		
Female	53,767	48.8
Male	56,093	50.9
Undetermined	357	0.3
Highest Blood Lead Level (µg/dL)		
≤4	108,051	98.0
5-9	1,789	1.6
10-14	234	0.2
15-19	70	0.1
≥20	73	0.1
Mean BLL (Geometric mean)	1.41	
Blood Specimen		
Capillary	31,365	28.5
Venous	70,157	63.7
Undetermined ²	8,695	7.8

1. For detailed analysis and breakdown of data refer to Supplementary Data Tables 1-5.

2. In Supplementary Data Tables blood tests with sample type unknown were counted as capillary.

Figure One
Percent of Children 0-72 Months of Age Tested for Lead with the Highest Blood Lead Level 5-9 $\mu\text{g}/\text{dL}$: 2000-2015

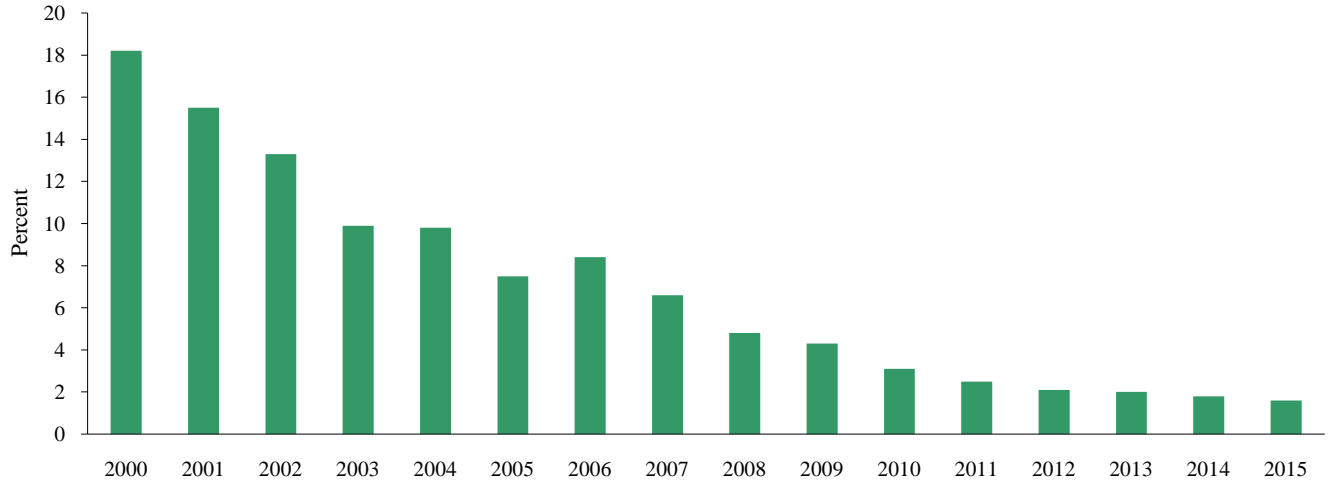


Figure Two
Number of Children 0-72 Months of Age Tested for Lead and Number Reported to Have Blood Lead Level $\geq 10 \mu\text{g}/\text{dL}$: 2000-2015

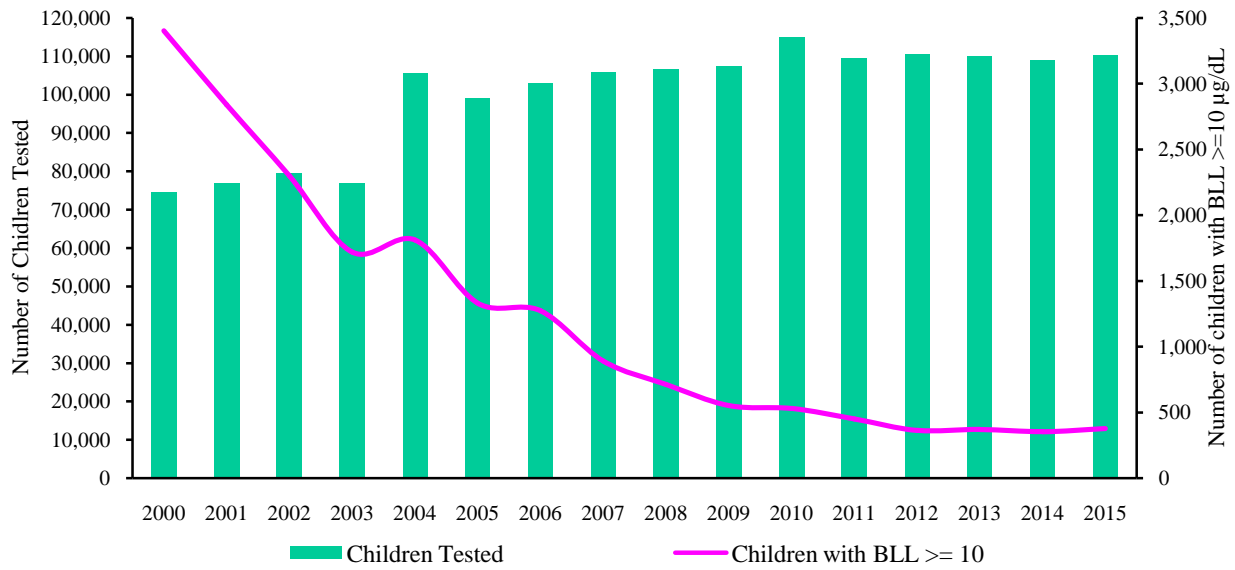


Table Two
Blood Lead Testing of Children 0-72 Months of Age by Jurisdiction in 2015¹

County	Population ² of Children	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level ≥10 µg/dL					
				Old Cases ³		New Cases ⁴		Total		Old Cases ⁵		New Cases ⁶		Total	
				Number	Percent	Number	Percent	Number	Percent ⁷	Number	Percent	Number	Percent	Number	Percent ⁷
Allegany	5,096	1,285	25.2	4	0.3	19	1.5	23	1.8	1	0.1	4	0.3	5	0.4
Anne Arundel	50,640	9,308	18.4	6	0.1	46	0.5	52	0.6	1	0.0	8	0.1	9	0.1
Baltimore	70,539	16,410	23.3	33	0.2	162	1.0	195	1.2	6	0.0	24	0.1	30	0.2
Baltimore City	59,474	17,222	29.0	280	1.6	624	3.6	904	5.2	60	0.3	144	0.8	204	1.2
Calvert	7,520	648	8.6	0	0.0	5	0.8	5	0.8	0	0.0	0	0.0	0	0.0
Caroline	3,396	685	20.2	3	0.4	9	1.3	12	1.8	0	0.0	4	0.6	4	0.6
Carroll	13,702	1,453	10.6	4	0.3	16	1.1	20	1.4	0	0.0	2	0.1	2	0.1
Cecil	9,496	1,435	15.1	5	0.3	24	1.7	29	2.0	0	0.0	2	0.1	2	0.1
Charles	13,913	2,233	16.0	0	0.0	15	0.7	15	0.7	0	0.0	3	0.1	3	0.1
Dorchester	2,937	630	21.5	5	0.8	9	1.4	14	2.2	0	0.0	1	0.2	1	0.2
Frederick	22,021	3,407	15.5	5	0.1	27	0.8	32	0.9	1	0.0	4	0.1	5	0.1
Garrett	2,339	394	16.8	0	0.0	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0
Harford	22,148	3,001	13.5	3	0.1	20	0.7	23	0.8	0	0.0	4	0.1	4	0.1
Howard	25,937	2,594	10.0	3	0.1	27	1.0	30	1.2	2	0.1	2	0.1	4	0.2
Kent	1,478	252	17.1	1	0.4	6	2.4	7	2.8	1	0.4	0	0.0	1	0.4
Montgomery	93,606	19,989	21.4	13	0.1	134	0.7	147	0.7	6	0.0	26	0.1	32	0.2
Prince George's	85,265	20,809	24.4	21	0.1	149	0.7	170	0.8	15	0.1	39	0.2	54	0.3
Queen Anne's	4,063	626	15.4	1	0.2	8	1.3	9	1.4	0	0.0	0	0.0	0	0.0
Saint Mary's	11,147	1,343	12.0	1	0.1	6	0.4	7	0.5	1	0.1	1	0.1	2	0.1
Somerset	1,863	514	27.6	1	0.2	8	1.6	9	1.8	1	0.2	2	0.4	3	0.6
Talbot	2,781	632	22.7	2	0.3	3	0.5	5	0.8	0	0.0	1	0.2	1	0.2
Washington	13,323	2,667	20.0	5	0.2	35	1.3	40	1.5	1	0.0	5	0.2	6	0.2
Wicomico	9,007	1,945	21.6	5	0.3	29	1.5	34	1.7	1	0.1	4	0.2	5	0.3
Worcester	3,403	735	21.6	0	0.0	6	0.8	6	0.8	0	0.0	0	0.0	0	0.0
Total	535,094	110,217	20.6	401	0.4	1,388	1.3	1,789	1.6	97	0.1	280	0.3	377	0.3

1. The table is based on the selection of the highest blood lead test for each child in calendar year 2015 in the order of venous, unknown, or capillary.
2. Adapted from Maryland census population 2010 provided by the Maryland Data Center, Maryland Department of Planning, www.planning.maryland.gov/msdc
3. Children with a blood lead level of 5-9 µg/dL in 2015 and with a history of blood lead level ≥ 5 µg/dL in the past.
4. Children with the very first blood lead level of 5-9 µg/dL in 2015. These children were either not tested in the past or all their tests had blood lead levels <5 µg/dL.
5. Children with a history of blood lead level ≥10 µg/dL. These children may have carried from 2014 or had a blood lead test with a blood lead level ≥10 µg/dL in the previous years.
6. Children with the very first blood lead level ≥10 µg/dL. These children may have not been tested in the past or all their blood lead tests had blood lead levels <10 µg/dL. This criterion may not necessarily match the criteria for the initiation of case management.
7. Due to rounding percentages to the first decimal point, the sum of breakdown percentages may not necessarily equal total percentage.

Statewide Activities to Reduce (Eliminate) Childhood Lead Poisoning

The overall Statewide activities to reduce (eliminate) childhood lead poisoning resulted in a significant drop in both the extent and severity of lead exposure among children over the years. Less than 50% of the children tested for lead in 1995 had blood lead levels ≤ 4 $\mu\text{g/dL}$. That percentage increased to 91% in 2005 and to more than 98% in 2015 (Figure Three).

Much of the decline can be attributed to the implementation of the Title 6, Subtitle 8, “Reduction of Lead Risk in Housing Act” and the increased emphasis on the testing of children living in identified “At Risk” areas in Maryland (Figure Four).

Figure Three
Blood Lead Distribution of Children 0-72 Months of Age Tested for Lead in 1995, 2005 and 2015

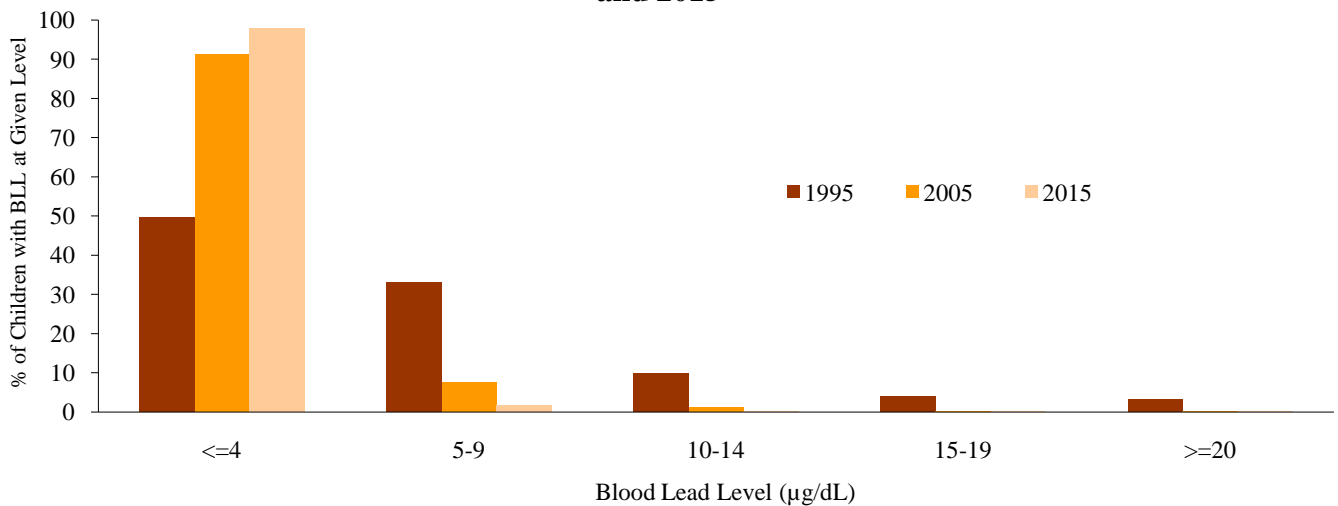
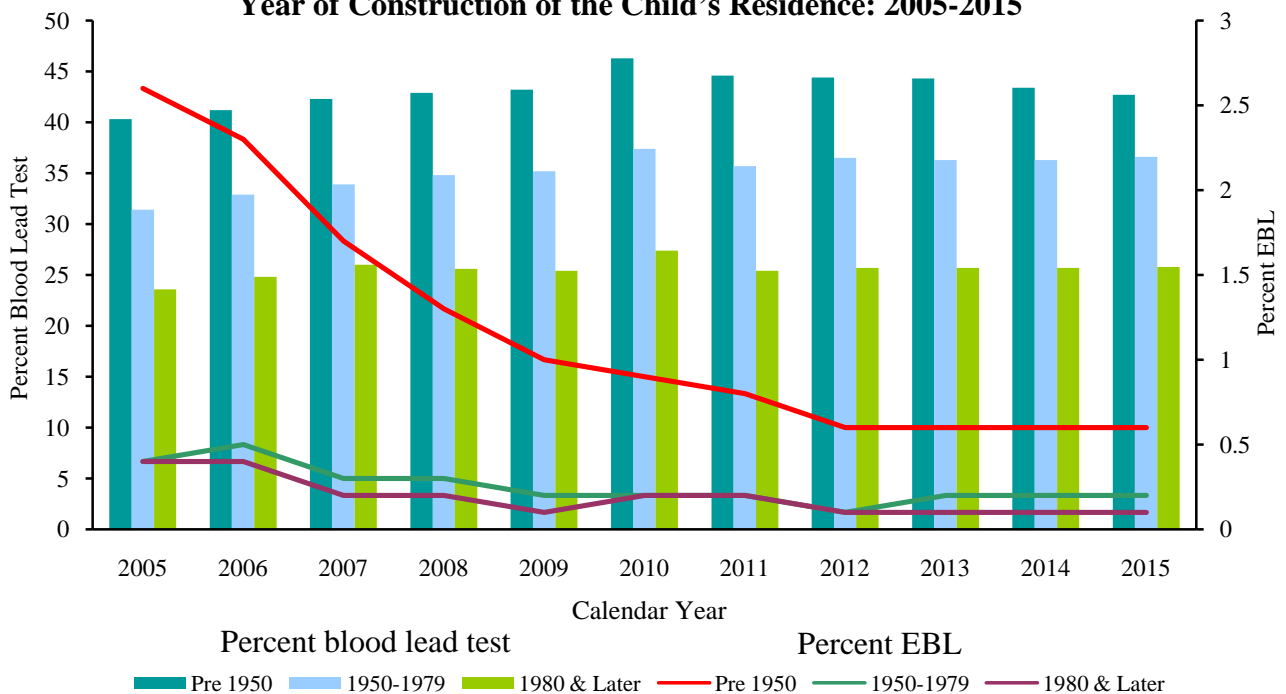


Figure Four
Blood Lead Testing of Children 0-72 Months of Age and Year of Construction of the Child’s Residence: 2005-2015



In 2006, 100% of an owner's affected properties were required to be in compliance with a Risk Reduction Standard.

With the implementation of the law and the compliance of owners of rental properties, the housing conditions of pre-1950 rental properties improved. The assumption that only children living in pre-1950 rental properties are at risk of having blood lead levels $\geq 10 \mu\text{g/dL}$ is no longer valid. Effective January 1, 2015, owners of rental properties built between 1950 and 1979 are required to meet the same risk reduction standards as owners of pre-1950 rental properties.

The drop can be further attributed to targeted blood lead testing to identify children who may be at the risk of lead exposure so that preventive actions can be implemented. Children at ages one and two, because of their mouthing behavior and beginning to explore their environment, are most likely to be exposed to lead. Of the 110,217 children 0-72 months of age tested for lead during 2015, 71,653 (65%) were one or two years old (Table Three).

Table Three
Blood Lead Testing of Children One and Two Years Old by Jurisdiction in 2015¹

County	One Year Old			Two Years Old			One & Two Years (Total) ²		
	Population	Children Tested		Population	Children Tested		Population	Children Tested	
		Number.	Percent		Number	Percent		Number.	Percent
Allegany	823	600	72.9	857	545	63.6	1,680	1,145	68.2
Anne Arundel	8,626	3,962	45.9	8,503	2,892	34.0	17,129	6,854	40.0
Baltimore	12,102	6,495	53.7	11,732	5,231	44.6	23,834	11,726	49.2
Baltimore City	10,616	6,204	58.4	10,161	5,181	51.0	20,777	11,385	54.8
Calvert	1,185	332	28.0	1,208	158	13.1	2,393	490	20.5
Caroline	557	304	54.6	560	259	46.3	1,117	563	50.4
Carroll	2,140	642	30.0	2,212	387	17.5	4,352	1,029	23.6
Cecil	1,631	637	39.1	1,580	317	20.1	3,211	954	29.7
Charles	2,251	767	34.1	2,424	797	32.9	4,675	1,564	33.5
Dorchester	501	257	51.3	505	235	46.5	1,006	492	48.9
Frederick	3,514	1,819	51.8	3,709	595	16.0	7,223	2,414	33.4
Garrett	350	160	45.7	394	127	32.2	744	287	38.6
Harford	3,649	1,222	33.5	3,655	821	22.5	7,304	2,043	28.0
Howard	4,131	1,087	26.3	4,353	636	14.6	8,484	1,723	20.3
Kent	253	105	41.5	233	85	36.5	486	190	39.1
Montgomery	15,765	6,116	38.8	15,763	5,092	32.3	31,528	11,208	35.5
Prince George's	14,659	6,234	42.5	14,321	5,228	36.5	28,980	11,462	39.6
Queen Anne's	650	260	40.0	651	194	29.8	1,301	454	34.9
Saint Mary's	1,836	572	31.2	1,828	359	19.6	3,664	931	25.4
Somerset	319	195	61.1	335	196	58.5	654	391	59.8
Talbot	493	292	59.2	488	241	49.4	981	533	54.3
Washington	2,172	963	44.3	2,259	807	35.7	4,431	1,770	39.9
Wicomico	1,561	767	49.1	1,508	713	47.3	3,069	1,480	48.2
Worcester	580	297	51.2	568	268	47.2	1,148	565	49.2
Statewide	90,364	40,289	44.6	89,807	31,364	34.9	180,171	71,653	39.8

1. For selection criteria and population data refer to Table 1.
2. For breakdown of blood lead testing for other age groups and blood lead level refer to "Supplementary Data Tables: Supplement #3".

Identifying Children with Lead Exposure

The critical issue in childhood lead poisoning is early detection. Because there are no specific clinical symptoms, a blood lead test is the most reliable technique to identify children with elevated blood lead levels. If there is any suspicion that a child is exposed to lead, a health care provider should do a blood lead test.

The State 2004 targeting plan called for universal blood lead testing of children who were living in the areas of the State that were declared “At-Risk” areas. The determination was based on a higher proportion of pre-1950 housing in these areas. At-Risk areas include Baltimore City, and Allegany, Caroline, Dorchester, Frederick, Garrett, Somerset, Washington, Wicomico, and Worcester Counties. Table Four presents blood lead testing in the At-Risk and Not-At-Risk areas of the State.

Table Four
Blood Lead Testing of Children 0-72 Months of Age and New Cases of Blood Lead Level of 5-9 and ≥ 10 $\mu\text{g}/\text{dL}$ In At-Risk and Not-At-Risk Areas in 2015

Area	Population	Children Tested		Children with BLL 5-9 $\mu\text{g}/\text{dL}$		Children with BLL ≥ 10 $\mu\text{g}/\text{dL}$	
		Number	Percent	Number	Percent	Number	Percent
At-Risk	116,060	28,064	24.2	1,057	3.8	229	0.8
Not-At-Risk	419,034	82,153	19.6	732	0.9	148	0.2
Statewide	535,094	110,217	20.6	1,789	1.6	377	0.3

Another group of children at risk of lead poisoning is children on Medical Assistance programs. Upon memorandum of understanding between the Department’s Lead Poisoning Prevention Program and the Office of Medicaid Administration of the Maryland Department of Health and Mental Hygiene (DHMH), childhood blood lead data is provided, on a quarterly and annual basis, to the Medicaid Program to be matched with the list of children on the Medical Assistance Program. The Medicaid Program prepares and distributes the reports of blood lead testing of children under the Medicaid Program for the State and local jurisdictions. For information and access to the reports refer to the Office of Medicaid Administration at DHMH.

Medical and Environmental Case Management

Maryland’s Lead Poisoning Prevention Program has well-established case management guidelines and environmental investigation protocols for follow-up of children with elevated blood lead levels (Tables Five and Six). A venous blood lead test ≥ 10 $\mu\text{g}/\text{dL}$ initiates case management and an environmental investigation. Currently, one venous or two capillary blood lead tests ≥ 10 $\mu\text{g}/\text{dL}$ trigger the Notice of Elevated Blood Lead Level (Notice of EBL) to be sent to the owner of a Pre-1978 residential dwelling unit (Affected Property). Under Maryland law, an owner who receives a Notice of EBL is required to perform specific lead risk reduction treatments to limit further exposure to a child. Effective January 1, 2015, property owners of rental properties built between 1950 and 1979 are now required to meet the same risk reduction standards as rental properties built prior to 1950. Furthermore, as of June 1, 2012 the Department, health departments, or other local

jurisdictions have the authority to order abatements in response to an investigation report of a child with an elevated blood lead level.

Table Five
Blood Lead Diagnostic and Follow-Up: Confirmation of a Capillary Blood Lead Test

BLL (µg/dL)	Confirm with venous blood lead test within
5-9	1-3 months
10 –19	3 months
20 – 44	1 week to 1 month*
45 – 59	48 hours
60-69	24 hours
≥70	Immediately as an emergency lab test

* The higher the BLL, the more urgent the need for confirmatory testing.

Table Six
Blood Lead Diagnostic and Follow-Up: Follow-Up for Venous Blood Lead Testing¹

BLL (µg/dL) Venous	Early follow-up(First 2-4 tests after identification)	Late follow-up (After BLL begins to decline)
≤4	Routine blood lead test according to protocol	
5-9	3 months	6 – 9 months
10 - 14	3 months ²	6 – 9 months
15 - 19	1 - 3 months ²	3 – 6 months
20 - 24	1 - 3 months ²	1 – 3 months
25 - 44	2 weeks – 1 month	1 month
≥45	As soon as possible	Chelation with subsequent follow-up

1. Seasonal variation of BLLs exists and may be more apparent in colder climate areas. Greater exposure in the summer months may necessitate more frequent follow-up.
2. Some case managers or health care providers may choose to repeat blood lead tests on all new patients within a month to ensure that their BLL level is not rising more quickly than anticipated.

Tables adapted from: *Centers for Disease Control and Prevention. Managing Elevated Blood Lead Levels Among Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta: CDC, 2002.*

During Calendar Year 2015, 261 children were identified having a first time venous blood lead level ≥ 10 µg/dL (“**Confirmed**”) resulting in each child receiving medical and environmental case management. This was an increase of 28 children requiring case management compared to 233 in CY14.

Maryland’s counties observed 121 “Confirmed” cases during CY15 compared to 114 in CY14, an increase of 7 cases. Prince George’s County had the highest number of children (37) requiring medical and environmental case management. Of the 37 children living in Prince George’s County requiring case management; 17 of the cases were the result of refugee families’ who had relocated from Afghanistan to the United States and settled in the State of Maryland. Due to the high use of cultural remedies, herbs, and make-up by these refugee families, the Department coordinated efforts with DHMH’s Office of Immigrant Health to develop outreach and educational material highlighting lead hazards in cultural remedies, herbs, and make-up.

During CY15, the Baltimore City Health Department responded to 140 children who required medical and environmental case management. This was an increase of 21 children requiring case management when compared to CY14 which observed 119 “Confirmed Cases”.

To view a breakdown of blood lead levels $\geq 10 \mu\text{g/dL}$ and age of housing, see Table Seven. A further breakdown of housing type and confirmed cases by jurisdiction can be viewed in Table Eight.

Table Seven
Percent of Children 0-72 Months of Age with Blood Lead Levels $\geq 10 \mu\text{g/dL}$ in 2015 and Age of the Housing

Property Type Baltimore City CY 2015		
	Percentage of Housing	Number of Cases
Pre-1950 Rental	59%	82
1950-1977 Rental	3%	5
Post-1978 Rental	0%	0
Owner Occupied	38%	53
Total Cases		140

Property Type Maryland Counties CY 2015		
	Percentage of Housing	Number of Cases
Pre-1950 Rental	13%	16
1950-1977 Rental	29%	35
Post-1978 Rental	13%	16
Owner Occupied	45%	54
Total Cases		121

Table Eight
MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Property Status of New Cases for Calendar Year 2015
By Jurisdiction

County	Number Properties	Owner-Occupied		Affected Property		Non-affected Property	
		Number	Percent	Number	Percent	Number	Percent
Allegany	3	3	100%	0	0%	0	0%
Anne Arundel	6	2	33%	4	67%	0	0%
Baltimore	25	9	36%	9	36%	7	28%
Baltimore City	140	53	38%	87	62%	0	0%
Calvert	0	0	0%	0	0%	0	0%
Caroline	5	2	40%	3	60%	0	0%
Carroll	2	1	50%	1	50%	0	0%
Cecil	1	1	100%	0	0%	0	0%
Charles	2	0	0%	0	0%	2	100%
Dorchester	1	1	100%	0	0%	0	0%
Frederick	3	2	67%	1	33%	0	0%
Garrett	0	0	0%	0	0%	0	0%
Harford	4	2	50%	1	25%	1	25%
Howard	2	1	50%	1	50%	0	0%
Kent	0	0	0%	0	0%	0	0%
Montgomery	18	8	44%	7	39%	3	17%
Prince George's	37	14	38%	21	57%	2	5%
Queen Anne's	0	0	0%	0	0%	0	0%
Saint Mary's	1	1	100%	0	0%	0	0%
Somerset	2	2	100%	0	0%	0	0%
Talbot	1	0	0%	1	100%	0	0%
Washington	4	3	75%	0	0%	1	25%
Wicomico	4	2	50%	2	50%	0	0%
Worcester	0	0	0%	0	0%	0	0%
Counties' Total	<i>121</i>	<i>54</i>	<i>45%</i>	<i>51</i>	<i>42%</i>	<i>16</i>	<i>13%</i>
Statewide	261	107	41%	138	53%	16	6%

Data Quality

The CLR is maintained in the “Systematic Tracking of Elevated Lead Levels and Remediation” (STELLAR) surveillance system, obtained from the CDC Lead Poisoning Prevention Program. CLR staff makes all efforts to improve data quality with respect to completeness, timeliness, and accuracy. Staff keep daily track of laboratory reporting to make sure laboratories are reporting all blood lead tests no later than biweekly. The law requires blood lead results ≥ 20 $\mu\text{g/dL}$ to be reported (fax) within 24 hours after a result is known. However, upon CLR request, laboratories agreed to report (fax) the result of all blood lead test ≥ 10 $\mu\text{g/dL}$ within 24 hours. With the CDC’s new position that a blood lead level of concern is ≥ 5 $\mu\text{g/dL}$, some laboratories even fax reports of

blood lead tests of ≥ 5 $\mu\text{g}/\text{dL}$. Staff checks for the completeness of data with respect to the child’s and guardian’s name, address, and telephone number.

In 2015, 82.5% of blood lead tests were reported to the registry electronically. This is a drop of more than four points in electronic reporting compared with 2014 (86.8%). The observed drop is secondary to the increase in the number of clinics and establishments using “Point of Care Instruments” (hand held lead analyzer) and reporting the result to the CLR in hard copy. Over the years there has been a gradual increase in the use of hand held lead analyzers. This increase has not necessarily resulted in increase in the number of blood lead tests, rather a shift in blood lead testing by laboratories to clinics (Table Nine). The average reporting time, from the time a blood sample is drawn to the time the result enters the CLR database is approximately 6 days. The average time for elevated blood lead results (≥ 10 $\mu\text{g}/\text{dL}$) is approximately 30 hours.

**Table Nine
Method of Blood Lead Reporting by Laboratories: 2010-2015**

Method of Reporting	2010		2011		2012		2013		2014		2015	
	Labs	Reports	Labs	Reports	Labs	Reports	Labs	Reports	Labs	Reports	Labs	Reports
Electronic	8	115,878	9	113,824	8	115,940	8	113,952	8	110,062	8	105,370
Hard Copy	30	9,702	31	12,072	32	11,041	35	12,908	47	16,758	66	22,360
Total	38	125,580	40	125,896	40	126,981	43	126,860	55	126,820	74	127,730
% Electronic	92.3		90.4		91.3		89.8		86.8		82.5	

Table Ten provides the summary reports for completeness of data as required by law. Completeness of data does not necessarily mean accuracy of the data.

**Table Ten
Completeness of Data for 2015**

Item	% Complete
Child’s name	100.0
Date of Birth	99.8
Sex/Gender	99.9
Race	51.6
Guardian’s name	57.2
Sample type	95.2
Test date	99.8
Blood lead level	99.9
Address (geocoded)	98.3
Telephone number	91.5

Blood Lead Laboratory Reporting Requirement

The amended law and regulations* of 2001 and 2002 require that:

1-The following child's demographic data should be included in each blood lead test reported:

- Date of Birth
- Sex
- Race
- Address
- Test date
- Sample type
- Blood lead level

2-Blood lead results ≥ 20 $\mu\text{g/dL}$ to be reported (fax) within 24 hours after result is known. All other results to be reported within two weeks.

3-Reporting format should comply with the format designed and provided by the Registry.

4-Data should be provided electronically.

* EA §6-303, Blood lead test reporting (COMAR 26.02.01, Blood lead test reporting)

Appendix A

Blood Lead Testing of Children 0-72 Months of Age by Major Age Group and Jurisdiction in 2015

Age Group	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level =10 µg/dL					
				Old Cases		New Cases		Total		Old Cases		New Cases		Total	
				Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany County															
0-35 Months	2,558	1,171	45.8	4	0.3	19	1.6	23	2.0	0	0.0	4	0.3	4	0.3
36-72 Months	2,538	114	4.5	0	0.0	0	0.0	0	0.0	1	0.9	0	0.0	1	0.9
Total	5,096	1,285	25.2	4	0.3	19	1.5	23	1.8	1	0.1	4	0.3	5	0.4
Anne Arundel County															
0-35 Months	25,781	7,432	28.8	3	0.0	43	0.6	46	0.6	0	0.0	8	0.1	8	0.1
36-72 Months	24,859	1,876	7.5	3	0.2	3	0.2	6	0.3	1	0.1	0	0.0	1	0.1
Total	50,640	9,308	18.4	6	0.1	46	0.5	52	0.6	1	0.0	8	0.1	9	0.1
Baltimore County															
0-35 Months	35,852	13,169	36.7	19	0.1	122	0.9	141	1.1	3	0.0	19	0.1	22	0.2
36-72 Months	34,687	3,241	9.3	14	0.4	40	1.2	54	1.7	3	0.1	5	0.2	8	0.2
Total	70,539	16,410	23.3	33	0.2	162	1.0	195	1.2	6	0.0	24	0.1	30	0.2
Baltimore City															
0-35 Months	31,760	12,679	39.9	109	0.9	507	4.0	616	4.9	22	0.2	117	0.9	139	1.1
36-72 Months	27,714	4,543	16.4	171	3.8	117	2.6	288	6.3	38	0.8	27	0.6	65	1.4
Total	59,474	17,222	29.0	280	1.6	624	3.6	904	5.2	60	0.3	144	0.8	204	1.2
Calvert County															
0-35 Months	3,570	568	15.9	0	0.0	5	0.9	5	0.9	0	0.0	0	0.0	0	0.0
36-72 Months	3,950	80	2.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	7,520	648	8.6	0	0.0	5	0.8	5	0.8	0	0.0	0	0.0	0	0.0
Caroline County															
0-35 Months	1,668	573	34.4	1	0.2	7	1.2	8	1.4	0	0.0	3	0.5	3	0.5
36-72 Months	1,728	112	6.5	2	1.8	2	1.8	4	3.6	0	0.0	1	0.9	1	0.9
Total	3,396	685	20.2	3	0.4	9	1.3	12	1.8	0	0.0	4	0.6	4	0.6

Appendix A

Blood Lead Testing of Children 0-72 Months of Age by Major Age Group and Jurisdiction in 2015

Age Group	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level =10 µg/dL					
				Old Cases		New Cases		Total		Old Cases		New Cases		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Carroll County															
0-35 Months	6,362	1,221	19.2	3	0.2	15	1.2	18	1.5	0	0.0	2	0.2	2	0.2
36-72 Months	7,340	232	3.2	1	0.4	1	0.4	2	0.9	0	0.0	0	0.0	0	0.0
Total	13,702	1,453	10.6	4	0.3	16	1.1	20	1.4	0	0.0	2	0.1	2	0.1
Cecil County															
0-35 Months	4,773	1,029	21.6	2	0.2	21	2.0	23	2.2	0	0.0	1	0.1	1	0.1
36-72 Months	4,723	406	8.6	3	0.7	3	0.7	6	1.5	0	0.0	1	0.2	1	0.2
Total	9,496	1,435	15.1	5	0.3	24	1.7	29	2.0	0	0.0	2	0.1	2	0.1
Charles County															
0-35 Months	6,969	1,864	26.7	0	0.0	14	0.8	14	0.8	0	0.0	3	0.2	3	0.2
36-72 Months	6,944	369	5.3	0	0.0	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0
Total	13,913	2,233	16.0	0	0.0	15	0.7	15	0.7	0	0.0	3	0.1	3	0.1
Dorchester County															
0-35 Months	1,527	496	32.5	1	0.2	6	1.2	7	1.4	0	0.0	1	0.2	1	0.2
36-72 Months	1,410	134	9.5	4	3.0	3	2.2	7	5.2	0	0.0	0	0.0	0	0.0
Total	2,937	630	21.5	5	0.8	9	1.4	14	2.2	0	0.0	1	0.2	1	0.2
Frederick County															
0-35 Months	10,715	2,590	24.2	3	0.1	24	0.9	27	1.0	1	0.0	2	0.1	3	0.1
36-72 Months	11,306	817	7.2	2	0.2	3	0.4	5	0.6	0	0.0	2	0.2	2	0.2
Total	22,021	3,407	15.5	5	0.1	27	0.8	32	0.9	1	0.0	4	0.1	5	0.1
Garrett County															
0-35 Months	1,120	300	26.8	0	0.0	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0
36-72 Months	1,219	94	7.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,339	394	16.8	0	0.0	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0

Appendix A

Blood Lead Testing of Children 0-72 Months of Age by Major Age Group and Jurisdiction in 2015

Age Group	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level =10 µg/dL					
				Old Cases		New Cases		Total		Old Cases		New Cases		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Harford County															
0-35 Months	10,856	2,253	20.8	1	0.0	18	0.8	19	0.8	0	0.0	4	0.2	4	0.2
36-72 Months	11,292	748	6.6	2	0.3	2	0.3	4	0.5	0	0.0	0	0.0	0	0.0
Total	22,148	3,001	13.5	3	0.1	20	0.7	23	0.8	0	0.0	4	0.1	4	0.1
Howard County															
0-35 Months	12,588	1,953	15.5	0	0.0	22	1.1	22	1.1	2	0.1	2	0.1	4	0.2
36-72 Months	13,349	641	4.8	3	0.5	5	0.8	8	1.2	0	0.0	0	0.0	0	0.0
Total	25,937	2,594	10.0	3	0.1	27	1.0	30	1.2	2	0.1	2	0.1	4	0.2
Kent County															
0-35 Months	738	203	27.5	0	0.0	4	2.0	4	2.0	0	0.0	0	0.0	0	0.0
36-72 Months	740	49	6.6	1	2.0	2	4.1	3	6.1	1	2.0	0	0.0	1	2.0
Total	1,478	252	17.1	1	0.4	6	2.4	7	2.8	1	0.4	0	0.0	1	0.4
Montgomery County															
0-35 Months	47,226	14,719	31.2	7	0.0	103	0.7	110	0.7	2	0.0	21	0.1	23	0.2
36-72 Months	46,380	5,270	11.4	6	0.1	31	0.6	37	0.7	4	0.1	5	0.1	9	0.2
Total	93,606	19,989	21.4	13	0.1	134	0.7	147	0.7	6	0.0	26	0.1	32	0.2
Prince George's County															
0-35 Months	44,110	13,962	31.7	6	0.0	90	0.6	96	0.7	8	0.1	31	0.2	39	0.3
36-72 Months	41,155	6,847	16.6	15	0.2	59	0.9	74	1.1	7	0.1	8	0.1	15	0.2
Total	85,265	20,809	24.4	21	0.1	149	0.7	170	0.8	15	0.1	39	0.2	54	0.3
Queen Anne's County															
0-35 Months	1,966	479	24.4	0	0.0	7	1.5	7	1.5	0	0.0	0	0.0	0	0.0
36-72 Months	2,097	147	7.0	1	0.7	1	0.7	2	1.4	0	0.0	0	0.0	0	0.0
Total	4,063	626	15.4	1	0.2	8	1.3	9	1.4	0	0.0	0	0.0	0	0.0

Appendix A

Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2015

Age Group	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level =10 µg/dL					
				Old Cases		New Cases		Total		Old Cases		New Cases		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Saint Mary's County															
0-35 Months	5,514	1,144	20.7	1	0.1	5	0.4	6	0.5	0	0.0	1	0.1	1	0.1
36-72 Months	5,633	199	3.5	0	0.0	1	0.5	1	0.5	1	0.5	0	0.0	1	0.5
Total	11,147	1,343	12.0	1	0.1	6	0.4	7	0.5	1	0.1	1	0.1	2	0.1
Somerset County															
0-35 Months	976	401	41.1	0	0.0	7	1.7	7	1.7	0	0.0	2	0.5	2	0.5
36-72 Months	887	113	12.7	1	0.9	1	0.9	2	1.8	1	0.9	0	0.0	1	0.9
Total	1,863	514	27.6	1	0.2	8	1.6	9	1.8	1	0.2	2	0.4	3	0.6
Talbot County															
0-35 Months	1,402	541	38.6	0	0.0	3	0.6	3	0.6	0	0.0	1	0.2	1	0.2
36-72 Months	1,379	91	6.6	2	2.2	0	0.0	2	2.2	0	0.0	0	0.0	0	0.0
Total	2,781	632	22.7	2	0.3	3	0.5	5	0.8	0	0.0	1	0.2	1	0.2
Washington County															
0-35 Months	6,609	1,847	27.9	4	0.2	30	1.6	34	1.8	0	0.0	5	0.3	5	0.3
36-72 Months	6,714	820	12.2	1	0.1	5	0.6	6	0.7	1	0.1	0	0.0	1	0.1
Total	13,323	2,667	20.0	5	0.2	35	1.3	40	1.5	1	0.0	5	0.2	6	0.2
Wicomico County															
0-35 Months	4,614	1,522	33.0	3	0.2	24	1.6	27	1.8	1	0.1	4	0.3	5	0.3
36-72 Months	4,393	423	9.6	2	0.5	5	1.2	7	1.7	0	0.0	0	0.0	0	0.0
Total	9,007	1,945	21.6	5	0.3	29	1.5	34	1.7	1	0.1	4	0.2	5	0.3
Worcester County															
0-35 Months	1,720	574	33.4	0	0.0	4	0.7	4	0.7	0	0.0	0	0.0	0	0.0
36-72 Months	1,683	161	9.6	0	0.0	2	1.2	2	1.2	0	0.0	0	0.0	0	0.0
Total	3,403	735	21.6	0	0.0	6	0.8	6	0.8	0	0.0	0	0.0	0	0.0

Appendix A

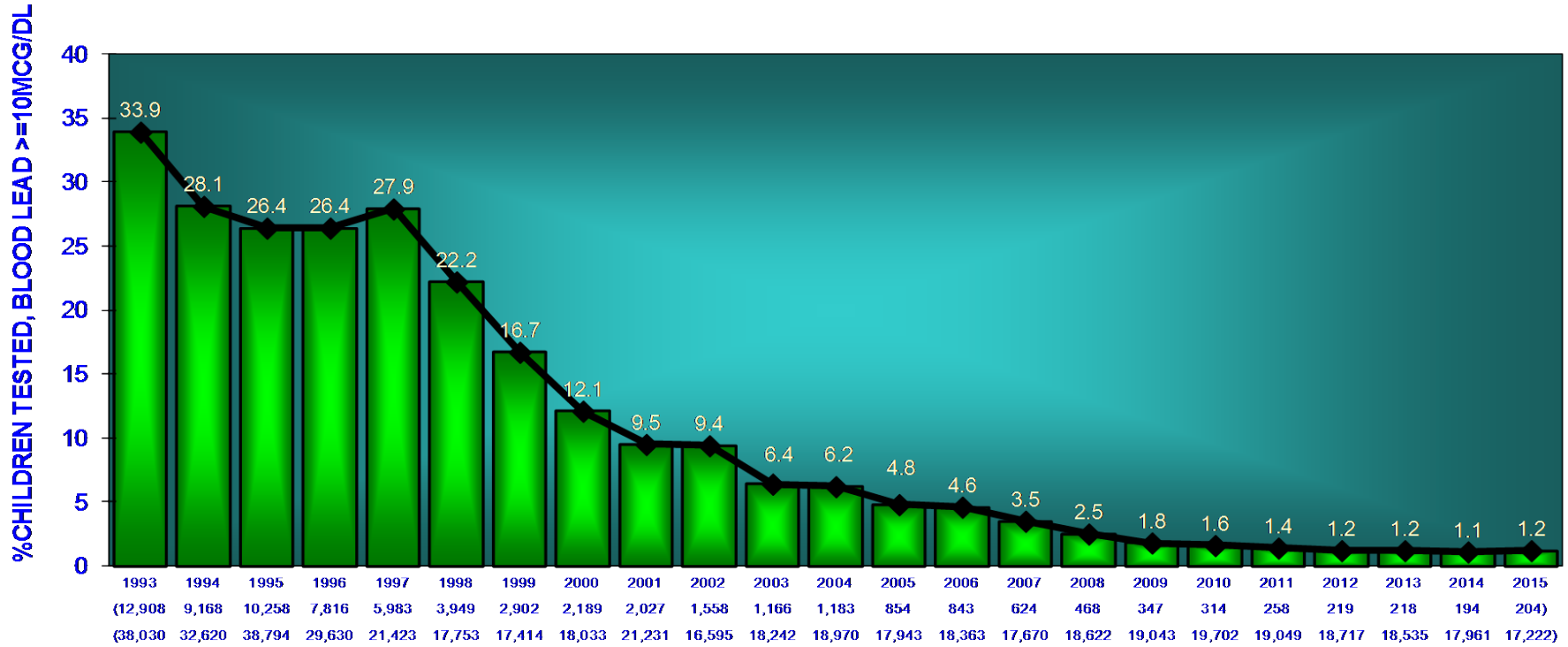
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2015

Age Group	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL						Blood Lead Level =10 µg/dL					
				Old Cases		New Cases		Total		Old Cases		New Cases		Total	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Statewide															
0-35 Months	270,974	82,690	30.5	167	0.2	1,101	1.3	1,268	1.5	39	0.0	231	0.3	270	0.3
36-72 Months	264,120	27,527	10.4	234	0.9	287	1.0	521	1.9	58	0.2	49	0.2	107	0.4
Total	535,094	110,217	20.6	401	0.4	1,388	1.3	1,789	1.6	97	0.1	280	0.3	377	0.3

Appendix B
Blood Lead Testing of Children 0-72 Months of Age, and Prevalence and Incidence of Blood Lead Level
≥10 µg/dL: 2008-2015

Calendar Year		Population	Blood Lead Tests		Prevalence		Incidence	
			Number	Percent	Number	Percent	Number	Percent
2008								
	Baltimore City	55,959	18,622	33.3	468	2.5	302	1.6
	Counties	418,941	87,761	21.0	245	0.3	187	0.2
	County Unknown		69		0		0	
	Statewide	474,900	106,452	22.4	713	0.7	489	0.5
2009								
	Baltimore City	56,431	19,043	33.7	347	1.8	214	1.1
	Counties	422,488	88,368	20.9	206	0.2	165	0.2
	County Unknown		5					
	Statewide	478,919	107,416	22.4	553	0.5	379	0.4
2010								
	Baltimore City	57,937	19,702	34.0	314	1.6	229	1.2
	Counties	433,661	94,650	21.8	217	0.2	170	0.2
	County Unknown		477		0		0	0.0
	Statewide	491,598	114,829	23.4	531	0.5	399	0.3
2011								
	Baltimore City	55,681	19,049	34.2	258	1.4	182	1.0
	Counties	445,021	90,481	20.3	194	0.2	160	0.2
	County Unknown		4		0		0	
	Statewide	500,702	109,534	21.9	452	0.4	342	0.4
2012								
	Baltimore City	56,701	18,717	33.0	219	1.2	148	0.8
	Counties	453,184	91,747	20.2	143	0.2	104	0.1
	County Unknown		75		2		3	
	Statewide	509,885	110,539	21.7	364	0.3	255	0.2
2013								
	Baltimore City	57,693	18,535	32.1	218	1.2	170	0.9
	Counties	461,171	91,539	19.8	152	0.2	134	0.1
	County Unknown		8		0		1	
	Statewide	518,864	110,082	21.2	371	0.3	304	0.3
2014								
	Baltimore City	58,622	17,961	30.6	194	1.1	129	0.7
	Counties	468,682	91,070	19.4	161	0.2	133	0.1
	County Unknown							
	Statewide	527,304	109,031	20.7	355	0.3	262	0.2
2015								
	Baltimore City	59,474	17,222	29.0	204	1.1	144	0.8
	Counties	475,620	92,995	19.6	173	0.2	136	0.1
	County Unknown							
	Statewide	535,094	110,217	20.6	377	0.3	280	0.3

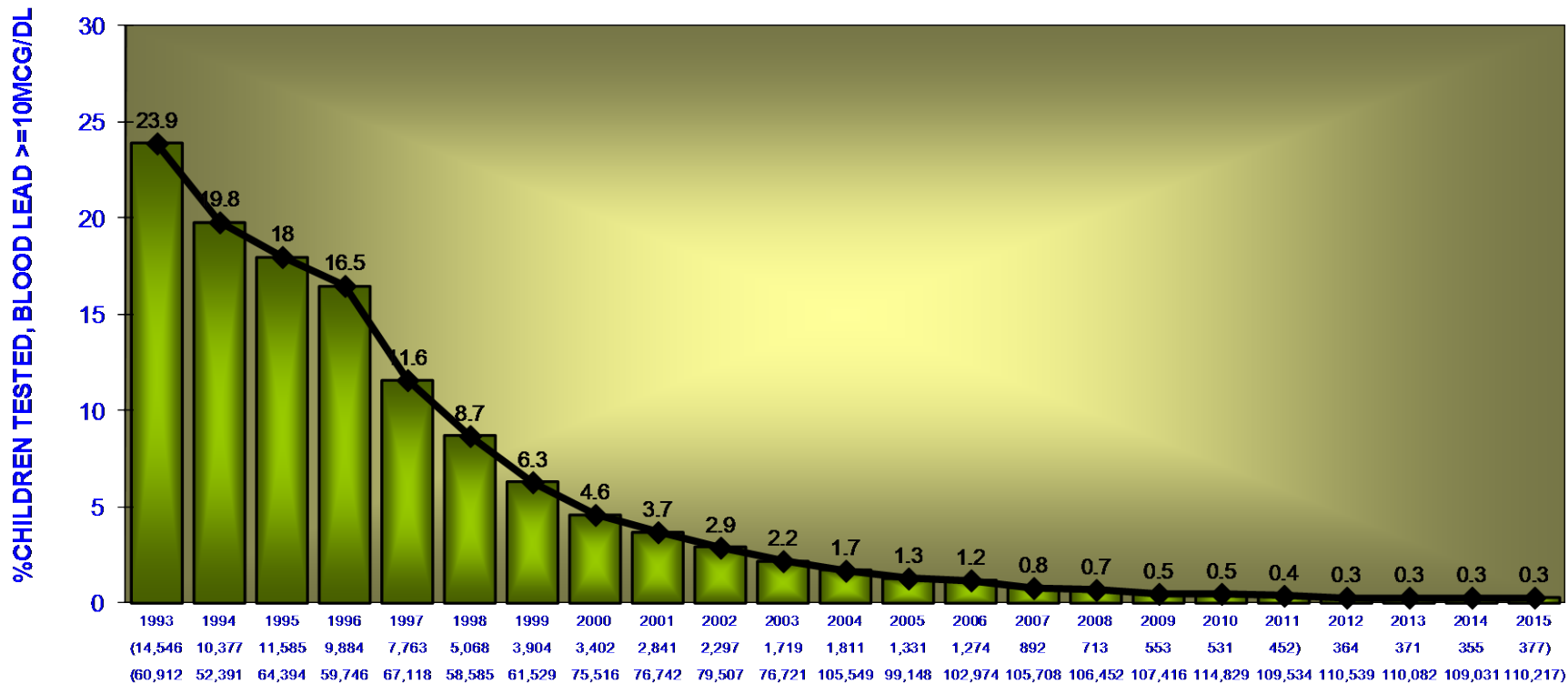
**MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD BLOOD LEAD SURVEILLANCE
BALTIMORE CITY 1993-2015**



CALENDAR YEAR
(Number of Children with BLL \geq 10mcg/dl)
(Number of Children Tested)



**MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD BLOOD LEAD SURVEILLANCE
STATEWIDE 1993-2015**



CALENDAR YEAR
(Number of Children with BLL ≥ 10mcg/dl)
(Number of Children Tested)

