



**MARYLAND DEPARTMENT OF THE ENVIRONMENT**

**Lead Poisoning Prevention Program**

**Childhood Blood Lead Surveillance in Maryland**

**Annual Report 2009**

**August, 2010**



## **MARYLAND CHILDHOOD LEAD REGISTRY**

### **ANNUAL SURVEILLANCE REPORT 2009**

#### **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 done 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 and local health departments as needed for case management and planning.

Since 1995, the CLR has released a comprehensive annual report on statewide childhood blood lead testing. This current report presents the childhood blood lead test results for calendar year 2009 (CY 2009). All numbers are based on blood lead testing (venous or capillary) on children. The CLR does not receive any reports on lead screening based on the lead risk assessment questionnaire. With few exceptions all numbers referred to children 0-72 months of age.

#### **CY 2009 Surveillance Highlights:**

- A total of 124,471 blood lead tests from 119,714 children 0-18 years were received and processed by the CLR in 2009, of which 111,890 tests were from 107,416 children 0-72 months. The overall blood lead testing for children 0-72 months for 2009 was the same as for 2008 (22.4%).
- The highest testing rates for children 0-72 months were found in Baltimore City (33.7%) followed by Caroline County (33.3%), Somerset County (32.4%), and Dorchester and Wicomico Counties (31.9%).
- The highest testing rates for children 0-35 months were found in Caroline County (56.4%), Somerset county (52.6%), Dorchester County (50.2%), and Talbot County (48.2%). Statewide, the testing rate for this age group for 2009 was almost the same as for 2008 (31.7% vs. 31.6%).
- Close to 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 were included in the address information.
- In 2009, more than 92% of blood lead tests were reported electronically. Two new laboratories started reporting in 2009 and two laboratories stopped doing blood lead analysis. Two laboratories changed reporting format from mailing diskette to on line reporting. The average reporting time, from the time sample is drawn to the time the

result enters the CLR database is about 6 days. The average time for elevated blood lead results ( $\geq 10 \mu\text{g/dL}$ ) is approximately 30 hours.

- Out of 107,416 children 0-72 months tested for lead statewide in 2009, 553 (0.5%) were found to have blood lead level  $\geq 10 \mu\text{g/dL}$  (prevalent cases) of whom 379 had their very first EBL test (incident cases) in 2009.
- In 2009, 54% of the children statewide with an EBL lived in other than pre-1950 residential rental dwelling units. In Baltimore City, 40% of the children with an EBL lived in other than pre-1950 residential dwelling units.

## **Overview**

Exposure to lead is still the most significant and widespread environmental hazards for children in Maryland. 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.

## **Terms and Definitions**

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”. CDC’s current blood lead level of concern of 10 µg/dL is based on: 1) lack of successful clinical or public health interventions with BLLs below 10 µg/dL, 2) likelihood of misclassification errors due to uncertainty associated with laboratory testing at levels <10 µg/dL, and 3) the need to prioritize public health resources for children with BLL ≥10 µg/dL. Based on these facts, the CLR dropped the term “Lead Poisoning” as was initially defined: “a venous blood lead level ≥25 µg/dL” and later dropped the level to 20 µg/dL. Instead, to better reflect the extent of the work and to direct program activities to the “more at-risk” areas, from 2005 forward new terms ‘incidence’ and ‘prevalence’ with the following definitions were included in annual report.

**EBL (Elevated Blood Lead level):** A blood lead level ≥10 µg/dL, currently defined by CDC as “Level of Concern”. The highest venous, in the absence of venous test the highest capillary test was the bases of determination.

**Prevalence:** Any child with an EBL for the calendar year is the basis of this selection. Prevalence reflects the existing load of children with EBL who may be new to the program or may have been carried-over from previous years (continuously or after some remission.)

**Incidence:** Any child with the very first EBL is basis of this selection. Incidence reflects the load of the children with EBL who may have never been tested for lead before or the result of all their blood lead tests were all below 10 µg/dL. Incidence is a better indicator for primary prevention. It is expected that the expansion of primary prevention activities results in less exposure and fewer new cases. The old cases, because of the extent and severity of the past exposure may remain internally exposed and continue to have EBL for months or even years. The procedures to locate new cases were discussed in detail in previous reports (Annual reports 2005, 2006).

## **Sources of Childhood Lead Exposure**

Lead paint dust from deteriorated lead paint or from renovation is the major source of exposure for children in Maryland. Out of estimated of 2,317,334 residential houses in Maryland 432,092 (18.7%) are built before 1950 (95% likely to contain lead paint) and 945,739 (40.8%) built between 1950-1979 (75% likely to have lead paint. (Source: US Census Bureau, American Community Survey, 2006-2008 American Community Survey 3-Year Estimates)

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.

**Statistical Report**

In calendar year 2009, a total of 107,416 children 0-72 months were tested for lead exposure statewide. Table One provides a summary of statewide statistics of blood lead testing in 2009.

**Table One  
Calendar Year (CY) 2009 Statistical Report<sup>1</sup>**

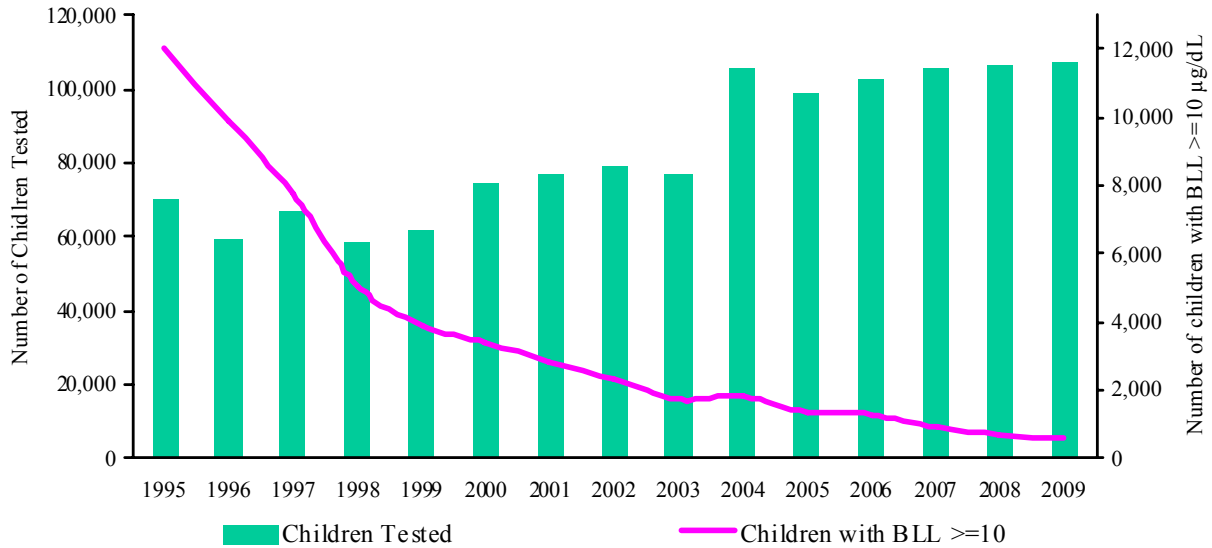
Item	Number	Percent (%)
<b>All Children</b>		
Number of tests	124,471	
Number of children	119,714	
<b>Children 0-72 Months</b>		
Number of tests	111,790	
Number of children	107,416	100.0
<b>Age</b>		
Under One	11,678	10.8
One Year	36,122	33.6
Two Years	29,433	27.4
Three Years	11,804	11.0
Four Years	10,926	10.3
Five Years	7,453	6.9
<b>Sex</b>		
Female	52,272	<u>48.7</u>
Male	54,316	<u>50.6</u>
Undetermined	828	<u>0.7</u>
<b>Highest Blood Lead Level (µg/dL)</b>		
≤4	102,280	<u>95.2</u>
5-9	4,583	<u>4.3</u>
10-14	374	<u>0.3</u>
15-19	103	<u>0.1</u>
≥20	76	≈ <u>0.1</u>
Mean BLL (Geometric mean)	<u>1.60</u>	
<b>Blood Specimen</b>		
Capillary	15,247	<u>14.2</u>
Venous	78,950	<u>73.5</u>
Undetermined <sup>2</sup>	<u>13,219</u>	<u>12.3</u>

1. For detailed analysis and breakdown of numbers refer to Supplementary Data Tables 1-5.
2. In supplementary data tables blood tests with sample type unknown were counted as capillary.

**Findings**

Childhood lead exposure further declined in 2009 (Figure One). There was 22.4% drop in both prevalence and incidence. The reduction has occurred both statewide and in areas of highest risk such as Baltimore City.

**Figure One**  
**Number of Children 0-72 Months Tested for Lead and Number Reported to Have Blood Lead Level  $\geq 10 \mu\text{g/dL}$ : 1995-2009**



The drop in both extent and severity of lead poisoning continued from 2008 to 2009 (Figure Two).

**Figure Two**  
**Blood Lead Distribution of Children 0-72 Months Tested for Lead in 2008 and 2009**

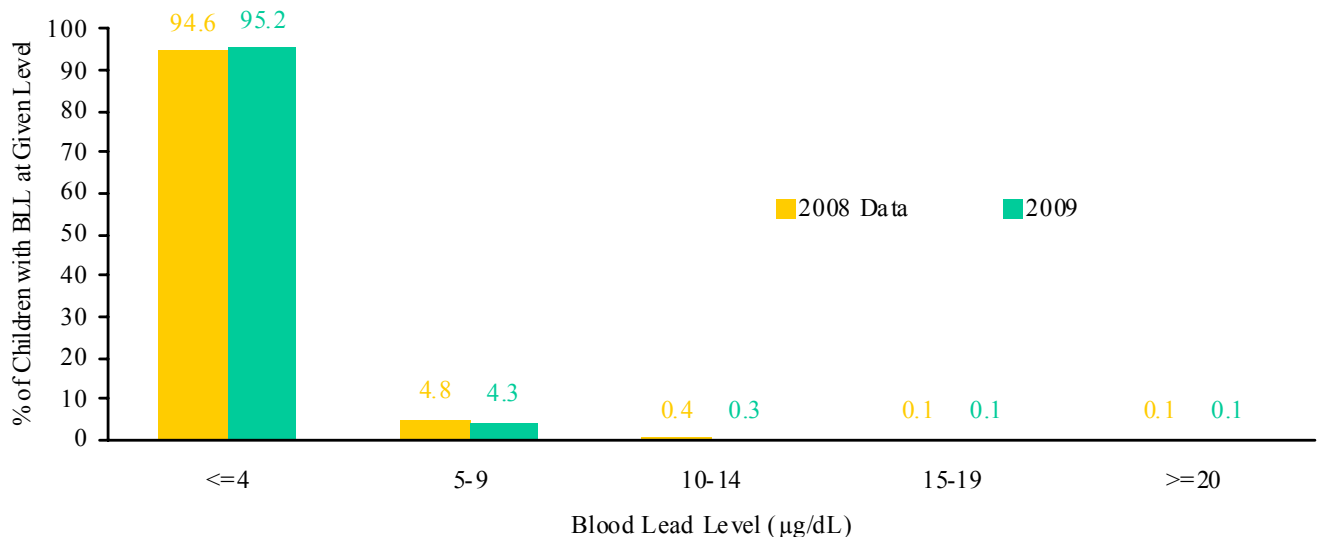


Table Two provides the breakdown of blood lead testing and the status of children with respect to lead exposure by jurisdiction in 2009.

**Table Two**  
**Blood Lead Testing of Children 0-72 Months by Jurisdiction in 2009**

County	Population of Children <sup>1</sup>	Children Tested		Old Cases <sup>2</sup>		New (Incident) Cases <sup>3</sup>		Total (Prevalent) Cases <sup>4</sup>	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	5,007	1,371	27.4	2	0.15	13	0.9	15	1.1
Anne Arundel	44,471	7,333	16.5	2	0.03	5	0.1	7	0.1
Baltimore	61,053	16,139	26.4	7	0.04	21	0.1	28	0.2
Baltimore City	56,431	19,043	33.7	133	0.70	214	1.1	347	1.8
Calvert	6,920	698	10.1	0	0.00	1	0.1	1	0.1
Caroline	2,516	839	33.3	2	0.24	5	0.6	7	0.8
Carroll	13,988	1,342	9.6	1	0.07	6	0.4	7	0.5
Cecil	8,030	1,212	15.1	2	0.17	2	0.2	4	0.3
Charles	12,101	1,836	15.2	0	0.00	4	0.2	4	0.2
Dorchester	2,287	730	31.9	1	0.14	2	0.3	3	0.4
Frederick	19,349	3,181	16.4	4	0.13	7	0.2	11	0.3
Garrett	2,490	473	19.0	0	0.00	2	0.4	2	0.4
Harford	21,180	3,184	15.0	0	0.00	2	0.1	2	0.1
Howard	24,990	2,503	10.0	0	0.00	1	0.0	1	0.0
Kent	1,253	323	25.8	2	0.62	0	0.0	2	0.6
Montgomery	80,950	18,200	22.5	5	0.03	20	0.1	25	0.1
Prince George's	78,279	19,594	25.0	5	0.03	45	0.2	50	0.3
Queen Anne's	3,614	607	16.8	0	0.00	4	0.7	4	0.7
Saint Mary's	8,618	1,527	17.7	1	0.07	3	0.2	4	0.3
Somerset	1,533	497	32.4	1	0.20	3	0.6	4	0.8
Talbot	2,417	675	27.9	1	0.15	3	0.4	4	0.6
Washington	11,207	3,006	26.8	0	0.00	9	0.3	9	0.3
Wicomico	7,058	2,248	31.9	4	0.18	6	0.3	10	0.4
Worcester	3,177	850	26.8	1	0.12	1	0.1	2	0.2
County Unknown		5		0		0		0	
<b>Statewide</b>	<b>478,919</b>	<b>107,416</b>	<b>22.4</b>	<b>174</b>	<b>0.16</b>	<b>379</b>	<b>0.4</b>	<b>553</b>	<b>0.5</b>

Notes:

1. Adapted from the Census Bureau: "State Interim Population Projections by Age and Sex: 2000-2030" <http://www.census.gov/population/www/projections/projectionsagesex.html>.
2. Children with a history of an EBL (blood lead level  $\geq 10$   $\mu\text{g/dL}$ ). These children may have carried over from 2008 or had an EBL test in previous years.
3. Children with the very first EBL in 2009. These children were either not tested in the past or their blood lead levels were below 10  $\mu\text{g/dL}$ .
4. All children with at least one blood lead test  $\geq 10$   $\mu\text{g/dL}$  in 2009. The selection is based on the highest venous or the highest capillary in the absence of any venous test.

Appendix A provides numbers of children by age groups of 0-35 months and 36-72 months, and Appendix B provides summary results for the past eight (8) years at the State, Baltimore City and Counties levels. For detailed breakdown of blood lead data the reader is referred to supplementary data tables: Supplements 1-5.

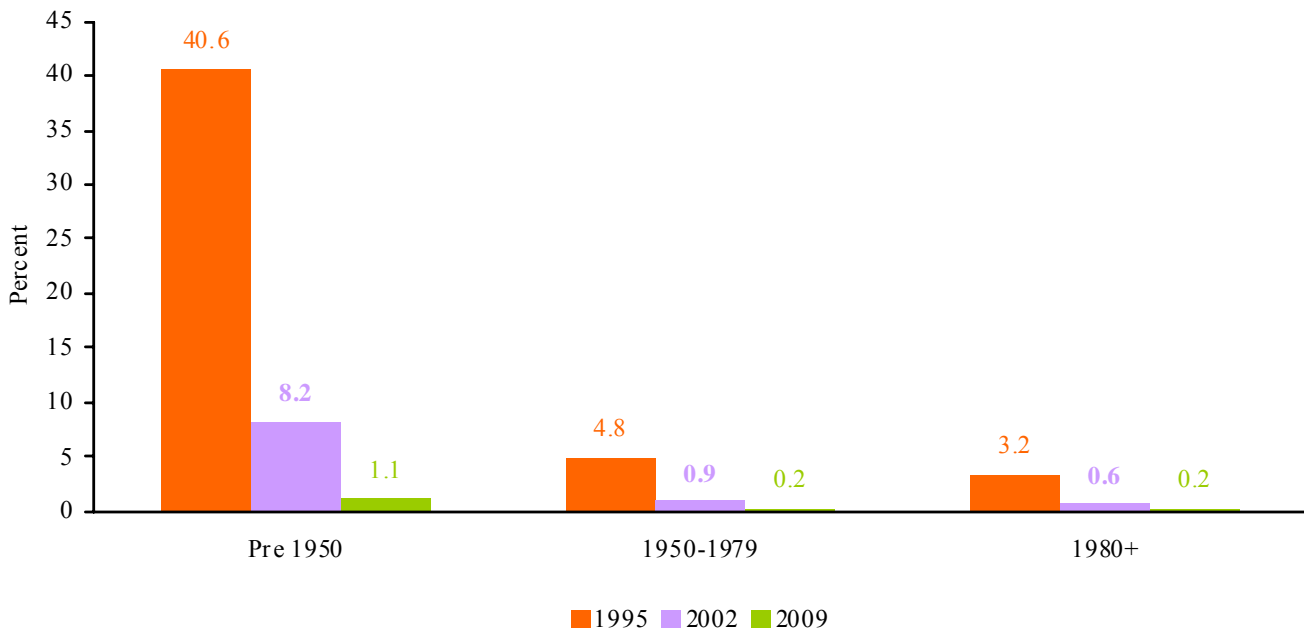
**Statewide activities to reduce (eliminate) childhood lead poisoning**

The State Elimination Plan calls for zero new cases of EBL by 2010. The plan focuses on primary prevention (removal and elimination of lead hazards) while maintaining well-established secondary prevention (identifying children who may be at risk of lead exposure) and tertiary prevention (case management of children exposed to lead) efforts in the state.

**Primary Prevention:** Much of the decline in blood lead levels is the result of implementation and enforcement of Maryland’s “Reduction of Lead Risk in Housing” law. The law requires each pre-1950 rental dwelling to be issued a Full Risk Reduction certificate at tenant turnover. In 2001, at least 50% of the owner's affected properties were required to be in compliance with the Full Risk Reduction Standard, 100% compliance was required in 2006. Effective October 1, 2004, the law requires rent court judges and local housing registry officials to not accept cases and applications from pre-1950 rental property owners who can not present lead certificates that indicate that their rental properties are in compliance with the Reduction of Lead Risk in Housing law.

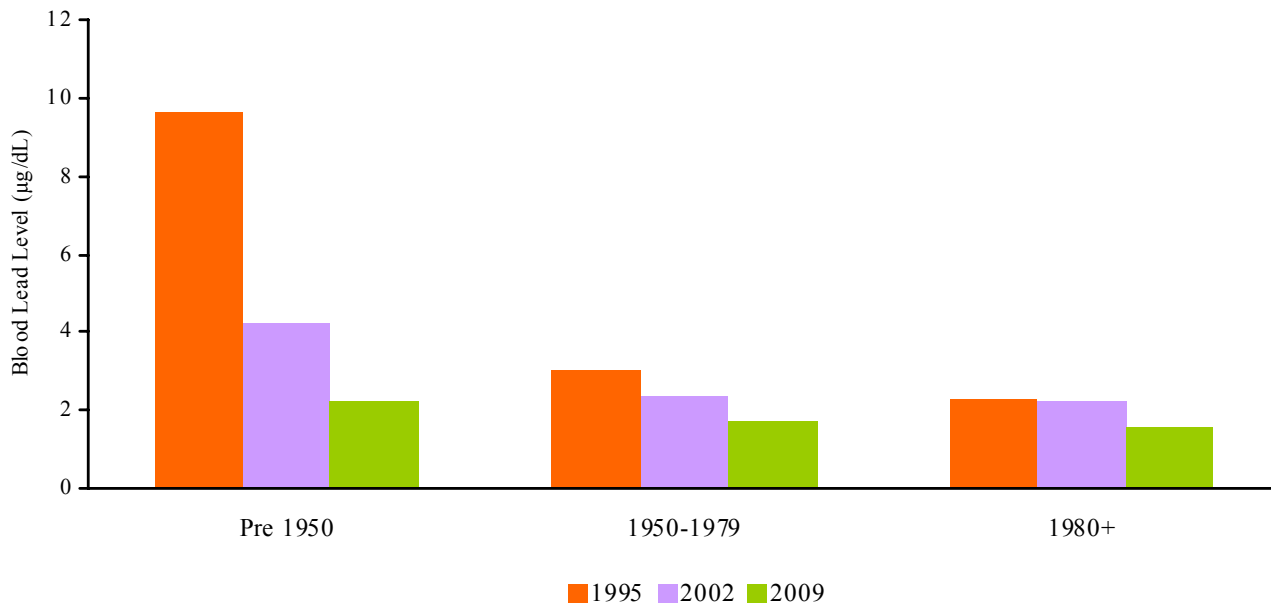
Although children living in pre-1950 housing units are much more likely to have EBL, the severity of exposure in such housing declined significantly over the years (Figures Three, Four).

**Figure Three**  
**Percent of Children 0-72 Months with Blood Lead Level  $\geq 10 \mu\text{g/dL}$  and Age of the Housing**





**Figure Four**  
**Mean Blood Lead Level of Children 0-72 Months and Age of the Housing**



- State laws and regulations with impact on childhood lead poisoning**
- ✓ Requirements to perform lead hazard reduction at each turnover in rental housing built before 1950. [Environment Article (EA) §6-8]
  - ✓ Outreach programs to parents, health care providers, and property owners, especially in at-risk areas. [EA§ 6-8, Health Article §18-106]

**Secondary Prevention:** The second element of the Elimination Plan is to identify children who may be at risk of lead exposure, so that preventive action can be implemented. Children age one and two, because of their mouthing behavior are most likely to be exposed to lead. To that end, State of Maryland requires that children at ages one and two years be tested. The percentage of one and two year old children tested for lead has increased substantially since 2004 (Figure Five).

Furthermore, children living in “at-risk” areas, areas with high proportion of pre 1950 housing units are more likely to be exposed to lead than children living in other areas. State has a targeted plan that identifies “at-risk areas.” Universal blood lead testing applies to Baltimore City children (City Ordinance 20 effective July 2000). Table Three presents blood lead testing in the At-risk and Not At-risk areas of the state. At-risk area includes Baltimore city, and Caroline, Dorchester, Frederick, Garrett, Somerset, Talbot, Washington, and Wicomico counties

Another group of children at risk of lead poisoning are children on Medical Assistance programs. Upon memorandum of understanding between MDE Lead Program and the office of Medicaid Administration of the Maryland Department of Health and Mental Hygiene (DHMH), childhood

blood lead data is provided, on quarterly and annual basis, to Medicaid program to be matched with the list of children on Medical Assistance Program. The Medicaid Program prepares and distributes the reports of blood lead testing of children under Medicaid program for the state and local jurisdictions. For information and access to the reports refer to the office of Medicaid Administration at DHMH.

**Figure Five**  
**Percent of Children One and Two Years Old Tested for Lead vs. Children of Other Ages**



**Table Three**  
**Blood Lead Testing in At-Risk and Not At-Risk areas in 2009**

Area	Population	Children Tested		Children with BLL $\geq 10$ $\mu\text{g/dL}$	
		Number	Percent	Number	Percent
At-Risk	113,470	32,913	29.0	414	1.3
Not At-Risk	365,449	74,503	20.4	139	0.2
Statewide	478,919	107,416	22.4	553	0.5

Another group of children who may be at risk of lead exposure are immigrant and asylum children. To determine lead exposure in these children and to fulfill one of the CDC grant requirement, the Lead Program made an agreement with the DHMH Office of Immigrant Health for the exchange of data. Based on this agreement, the Lead Program receives, on biannual basis, records of refugee and migrant children who settled in Maryland. The records are then matched with CLR records to determine the blood lead test status of these children. The outcome of matching is provided to the Office of Immigrant Health for proper follow up. For calendar year 2009, the list of migrant and asylum children included 552 records of which 267 were matched with childhood lead registry data (Table Four). Of 267 matched children 118 were under age five at the time blood lead test. Table Five presents comparison of blood lead level between migrants/asylum children and the statewide childhood blood lead level

**Table Four**  
**Matching of Migrant/Asylum Children Who Settled in Maryland with the Maryland Statewide Blood Lead Data (CY 2009)**

Matching level	Number of match
Complete name (last, first) and date of birth	176
Complete name (last, first) only	23
First five letters of name (last, first) and date of birth	24
First five letters of name (last, first) only	10
Reverse match*	4
No match found	285

\* The order of last and first name in refugee file were matched against the order of first and last name in CLR file.

**Table Five**  
**Blood Lead Level of Migrant/Asylum Children vs. Statewide Childhood Blood lead Level**

Blood Lead Lead ( $\mu\text{g}/\text{dL}$ )	Refugee/Asylum Children		Statewide data	
	Number	Percent	Number	Percent
$\leq 4$	90	76.3	102,280	95.2
5-9	26	22.0	4,583	4.3
$\geq 10$	2	1.7	553	0.5
Total	118	100.0	107,416	100.0

**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.

**Tertiary Prevention:** Maryland’s Lead Poisoning Prevention Program has well-established case management guidance and environmental investigation protocols for follow-up of children with elevated blood lead level. As of February 24, 2006, one venous or two capillary blood lead tests  $\geq 10 \mu\text{g}/\text{dL}$  trigger the Notice of EBL under the Reduction of Lead Risk in Housing Law. A venous blood lead test  $\geq 10 \mu\text{g}/\text{dL}$  in Baltimore City or a venous blood lead test  $\geq 15 \mu\text{g}/\text{dL}$  in Maryland counties initiates environmental investigation. Tables Six and Seven outline the State’s protocol for diagnostic and follow up blood lead testing.

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.*

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

<b>BLL (µg/dL)</b>	<b>Confirm with venous blood lead test within</b>
≤9	Routine blood lead test according to protocol
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 Seven**  
**Blood Lead Diagnostic and Follow-Up: Follow-Up for Venous Blood Lead Testing<sup>1</sup>**

<b>BLL (µg/dL) Venous</b>	<b>Early follow-up(First 2-4 tests after identification)</b>	<b>Late follow-up (After BLL begins to decline)</b>
≤9	Routine blood lead test according to protocol	
10 - 14	3 months <sup>2</sup>	6 – 9 months
15 - 19	1 - 3 months <sup>2</sup>	3 – 6 months
20 - 24	1 - 3 months <sup>2</sup>	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.

**Educational Burden of Childhood Lead Exposure**

Childhood lead exposure at early ages (before age 5) may negatively affect children’s neurobehavioral development and their later educational achievements. The effect may not show up until the child enters school (kindergarten). Table Eight presents the extent of history of EBL among children who were tested for lead and would be at kindergarten age on September 1, 2010.

**Table Eight**  
**Blood Lead Testing, and Childhood Lead Exposure of Kindergarten Population**

Children who would be 5 to 6 years old (kindergarten age) on September 1, 2010 and were tested for lead and had BLL $\geq 10$ $\mu\text{g/dL}$			
	Children	Children with EBL	
County	Tested	Number	Percent
Allegany	671	10	1.5
Anne Arundel	4,616	13	0.3
Baltimore	9,490	61	0.6
Baltimore City	9,408	382	4.1
Calvert	559	5	0.9
Caroline	481	4	0.8
Carroll	988	4	0.4
Cecil	851	3	0.4
Charles	1,287	1	0.1
Dorchester	374	3	0.8
Frederick	2,246	8	0.4
Garrett	306	1	0.3
Harford	1,917	8	0.4
Howard	1,585	3	0.2
Kent	181	2	1.1
Montgomery	10,626	31	0.3
Prince George's	11,126	36	0.3
Queen Anne's	449	1	0.2
Saint Mary's	996	1	0.1
Somerset	294	4	1.4
Talbot	376	1	0.3
Washington	1,747	12	0.7
Wicomico	1,427	19	1.3
Worcester	574	3	0.5
County Unknown	66	1	1.5
<b>Statewide</b>	<b>62,641</b>	<b>617</b>	<b>1.0</b>

**Data Quality**

The CLR is maintained in the “Systematic Tracking of Elevated Lead Levels and Remediation” (STELLAR) surveillance system, obtained from CDC Lead Poisoning Prevention Program. CLR staff makes all efforts to further 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  $\geq 20$   $\mu\text{g/dL}$  to be reported (fax) within 24 hours after result is known. However, upon CLR request, laboratories agreed to report (fax) the result of all blood lead test  $\geq 10$   $\mu\text{g/dL}$  within 24 hours.

For all blood lead tests  $\geq 10$   $\mu\text{g}/\text{dL}$ , staff checks the completeness of data in particular with respect to child’s and guardian’s name, address, and telephone number.

In 2009, more than 92% of blood lead tests were reported to the registry electronically. The average reporting time, from the time sample is drawn to time the result enters the CLR database is approximately 6 days. The average time for elevated blood lead results ( $\geq 10$   $\mu\text{g}/\text{dL}$ ) is approximately 30 hours. Table Nine provides the summary reports for completeness of data as required by law.

**Table Nine  
Completeness of Data for 2009**

Item	% Complete
Child’s name <sup>1</sup>	100.0
Date of Birth <sup>1</sup>	100.0
Sex/Gender	99.1
Race	52.8
Guardian’s name	51.8
Sample type	87.4
Blood lead level	100.0
Address (geocoded)	89.9
Telephone Number <sup>2</sup>	92.5

1. Reports with missing (wrong) name and/or date of birth are held by the program until they are corrected.
2. Quality control for telephone number started in 2009.

**Migration into New System**

While the staff continues to work with Stellar, work is underway to migrate data into the new CDC data processing package: “Healthy Housing and Lead Poisoning Surveillance System (HHLPSS)”. Because of the complexity of HHLPSS requirements, it does not fit well within current MDE IT establishment. On the other hand, the Maryland Department of Health and Mental Hygiene (DHMH) by the nature of its functionality has well established IT personnel and equipment to handle and process medical and health related reports. DHMH is in the process to centralize statewide reporting of all health related events including laboratory tests. To take advantage of DHMH facilities, and to speed up the process of migration into HHLPSS, the Lead Program at MDE has been coordinating with DHMH on this matter. The preliminary agreement

is that the DHMH IT personnel will be in-charge of receiving, downloading, and maintaining all laboratory blood lead reporting at their physical location and the MDE Lead Program personnel will be responsible for the registry's day to day operation, data quality control, data analyses, and data distribution. It is expected that the agreement will be finalized by late summer and the Lead Program will be ready for migration into HHLPSS by the fourth quarter of 2010.

**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  $\geq 20$   $\mu\text{g/dL}$  to be reported (fax) within 24 hours after result is known. All other results to be reported every 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 by Major Age Group and Jurisdiction in 2009**

**Children Tested    Prevalent Cases    Incident Cases**  
**Population Number    Percent    Number    Percent    Number    Percent**

Allegany County							
0-35 Months	2,567	1,152	44.9	12	1.0	11	1.0
36-72 Months	2,440	219	9.0	3	1.4	2	0.5
Total	5,007	1,371	27.4	15	1.1	13	0.9
Anne Arundel County							
0-35 Months	22,799	5,501	24.1	4	0.1	3	0.1
36-72 Months	21,672	1,832	8.5	3	0.2	2	0.1
Total	44,471	7,333	16.5	7	0.1	5	0.1
Baltimore County							
0-35 Months	30,214	12,361	40.9	19	0.2	16	0.1
36-72 Months	30,839	3,778	12.3	9	0.2	5	0.1
Total	61,053	16,139	26.4	28	0.2	21	0.1
Baltimore City							
0-35 Months	29,375	13,864	47.2	235	1.7	182	1.3
36-72 Months	27,056	5,179	19.1	112	2.2	32	0.6
Total	56,431	19,043	33.7	347	1.8	214	1.1
Calvert County							
0-35 Months	3,334	546	16.4	1	0.2	1	0.2
36-72 Months	3,586	152	4.2	0	0.0	0	0.0
Total	6,920	698	10.1	1	0.1	1	0.1
Caroline County							
0-35 Months	1,236	697	56.4	6	0.9	5	0.7
36-72 Months	1,280	142	11.1	1	0.7	0	0.0
Total	2,516	839	33.3	7	0.8	5	0.6
Carroll County							
0-35 Months	6,800	967	14.2	5	0.5	5	0.5
36-72 Months	7,188	375	5.2	2	0.5	1	0.3
Total	13,988	1,342	9.6	7	0.5	6	0.4
Cecil County							
0-35 Months	4,173	785	18.8	2	0.3	2	0.3
36-72 Months	3,857	427	11.1	2	0.5	0	0.0
Total	8,030	1,212	15.1	4	0.3	2	0.2



**Appendix A**  
**Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2009**

**Children Tested    Prevalent Cases    Incident Cases**  
**Population Number    Percent    Number    Percent    Number    Percent**

Charles County							
0-35 Months	5,728	1,324	23.1	4	0.3	4	0.3
36-72 Months	6,373	512	8.0	0	0.0	0	0.0
Total	12,101	1,836	15.2	4	0.2	4	0.2
Dorchester County							
0-35 Months	1,151	577	50.2	2	0.3	1	0.3
36-72 Months	1,136	153	13.5	1	0.7	1	0.7
Total	2,287	730	31.9	3	0.4	2	0.3
Frederick County							
0-35 Months	9,756	2,253	23.1	9	0.4	7	0.3
36-72 Months	9,593	928	9.7	2	0.2	0	0.0
Total	19,349	3,181	16.4	11	0.3	7	0.2
Garrett County							
0-35 Months	1,335	326	24.4	1	0.3	1	0.3
36-72 Months	1,155	147	12.7	1	0.7	1	0.7
Total	2,490	473	19.0	2	0.4	2	0.4
Harford County							
0-35 Months	10,859	2,334	21.5	1	0.0	1	0.0
36-72 Months	10,321	850	8.2	1	0.1	1	0.1
Total	21,180	3,184	15.0	2	0.1	2	0.1
Howard County							
0-35 Months	12,479	1,765	14.1	1	0.1	1	0.1
36-72 Months	12,511	738	5.9	0	0.0	0	0.0
Total	24,990	2,503	10.0	1	0.0	1	0.0
Kent County							
0-35 Months	657	267	40.6	1	0.4	0	0.0
36-72 Months	596	56	9.4	1	1.8	0	0.0
Total	1,253	323	25.8	2	0.6	0	0.0
Montgomery County							
0-35 Months	41,684	12,918	31.0	16	0.1	15	0.1
36-72 Months	39,266	5,282	13.5	9	0.2	5	0.1
Total	80,950	18,200	22.5	25	0.1	20	0.1

**Appendix A**  
**Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2009**

**Children Tested    Prevalent Cases    Incident Cases**  
**Population Number    Percent    Number    Percent    Number    Percent**

Prince George's County							
0-35 Months	39,994	12,518	31.3	29	0.2	27	0.2
36-72 Months	38,285	7,076	18.5	21	0.3	18	0.3
Total	78,279	19,594	25.0	50	0.3	45	0.2
Queen Anne's County							
0-35 Months	1,842	470	25.5	4	0.9	4	0.9
36-72 Months	1,772	137	7.7	0	0.0	0	0.0
Total	3,614	607	16.8	4	0.7	4	0.7
Saint Mary's County							
0-35 Months	4,255	1,294	30.4	4	0.3	3	0.2
36-72 Months	4,363	233	5.3	0	0.0	0	0.0
Total	8,618	1,527	17.7	4	0.3	3	0.2
Somerset County							
0-35 Months	767	403	52.6	2	0.5	2	0.5
36-72 Months	766	94	12.3	2	2.1	1	1.1
Total	1,533	497	32.4	4	0.8	3	0.6
Talbot County							
0-35 Months	1,174	566	48.2	4	0.7	3	0.5
36-72 Months	1,243	109	8.8	0	0.0	0	0.0
Total	2,417	675	27.9	4	0.6	3	0.4
Washington County							
0-35 Months	5,695	2,022	35.5	5	0.2	5	0.2
36-72 Months	5,512	984	17.9	4	0.4	4	0.4
Total	11,207	3,006	26.8	9	0.3	9	0.3
Wicomico County							
0-35 Months	3,704	1,671	45.1	5	0.3	5	0.3
36-72 Months	3,354	577	17.2	5	0.9	1	0.2
Total	7,058	2,248	31.9	10	0.4	6	0.3
Worcester County							
0-35 Months	1,684	650	38.6	2	0.3	1	0.3
36-72 Months	1,493	200	13.4	0	0.0	0	0.0
Total	3,177	850	26.8	2	0.2	1	0.1

**Appendix A**  
**Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2009**

**Children Tested    Prevalent Cases    Incident Cases**  
**Population Number    Number    Percent    Number    Percent    Number    Percent**

County Unknown							
0-35 Months		2		0		0	
36-72 Months		3		0		0	
Total		5		0		0	
Statewide							
0-35 Months	243,260	77233	31.7	374	0.5	305	0.4
36-72 Months	235,659	30183	12.8	179	0.6	74	0.2
Total	478,919	107416	22.4	553	0.5	379	0.4

**Appendix B**  
**Blood Lead Testing of Children 0-72 Months: 2001-2008**

Calendar Year		Population	<u>Blood Lead Tests</u>		<u>BLL ≥10 µg/dL</u>		<u>Lead Poisoning</u>	
			Number	Percent	Number	Percent	Number	Percent
2002	Baltimore City	52,744	16,595	31.5	1,558	9.4	183	1.1
	Counties	384,073	62,822	16.4	737	1.2	77	0.1
	Unknown		90		2		0	
	Total	436,817	79,507	18.2	2,297	2.9	260	0.3
2003	Baltimore City	51,892	18,242	35.2	1,166	6.4	160	0.9
	Counties	386,076	58,470	15.1	552	0.9	77	0.1
	Unknown		9		1		0	
	Total	437,968	76,721	17.5	1,719	2.2	237	0.3
2004	Baltimore City	52,796	18,970	35.9	1183	6.2	147	0.8
	Counties	395,310	83,002	21.0	573	0.7	83	0.1
	Unknown		3,577		55			
	Total	448,106	105,549	23.6	1,811	1.7	230	0.2
2005	Baltimore City	53,626	17,943	33.5	854	4.8	534	3.0
	Counties	401,888	80,848	20.1	463	0.6	382	0.5
	Unknown		357		14		0	
	Total	455,514	99,148	21.8	1,331	1.3	916	0.9
2006	Baltimore City	54,547	18,363	33.7	843	4.6	573	3.1
	Counties	408,784	84,611	20.7	431	0.5	363	0.4
	Unknown		199		21		20	
	Total	463,331	102,974	22.2	1,274	1.2	936	0.9
2007	Baltimore City	55,142	17,670	32.0	624	3.5	435	2.5
	Counties	413,248	87,760	21.2	267	0.3	218	0.2
	Unknown		278		1		1	
	Total	468,390	105,708	22.6	892	0.8	654	0.6
2008	Baltimore City	55,959	18,622	33.3	468	2.5	302	1.6
	Counties	418,941	87,830	21.0	245	0.3	187	0.2
	Unknown		69		0		0	
	Total	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	0.1
	Unknown		5					
	Total	468,390	107,416	22.4	553	0.5	379	0.4