MARYLAND DEPARTMENT OF THE ENVIRONMENT

LEAD POISONING PREVENTION PROGRAM

Childhood Blood Lead Surveillance in Maryland

2001 Annual Report

November 2002

MARYLAND CHILDHOOD LEAD REGISTRY

2001 ANNUAL SURVEILLANCE REPORT

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 provides blood lead test results to local health departments as needed for case management and planning.

Since 1995, the registry 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 2001 (CY 2001). All numbers are based on blood lead testing on children. The CLR does not receive any reports on lead screening based on the lead risk assessment questionnaire.

CY 2001 Surveillance Highlights:

Testing increased statewide, especially at ages 1 and 2. Testing of children at age 1 and 2, the age of greatest exposure risk, showed a slight increase statewide compared to 2000 from 33.8%of 1 year olds to 38% and from 21.6% to 24% of 2 year olds. Testing at age 1 and 2 for Baltimore City children became mandatory under Baltimore City ordinance in July 2000. Testing of Baltimore City children increased compared to 2000 from 65.4% of one year olds to 82.9% and 48.2% of 2 year olds to 64.2%. Most counties showed an increase in testing, especially in 1 and 2 year olds.

The number of children with elevated blood leads continues to decrease compared to 2000, but remains a significant problem. Children with blood lead levels above 10 μg/dL, CDC's level of concern, decreased to 2,841 or 3.7% of children tested statewide from 3,402 or 4.6% in 2000. Children with blood lead levels of 20 μg/dL and above, or "lead poisoning", decreased to 288 or 0.4% of children tested statewide from 353 or 0.5 % in 2000.

The residences of children with elevated blood lead levels continue to be disproportionately concentrated in Baltimore City and other areas of old housing and low income on the Eastern Shore and in Western Maryland. Of children tested in Baltimore City, 2,027 or 9.5% had blood lead levels of 10 μg/dL or more, and 230 or 1.1% had confirmed blood lead levels of 20 μg/dL or more.

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OVERVIEW OF LEAD POISONING PREVENTION IN MARYLAND

LEAD POISONING IN MARYLAND

Lead is one of the most significant and widespread environmental hazards for children in Maryland. Children are at greatest risk from birth to age six while their neurological systems develop. Sustained exposure to lead can cause long-lasting neurological damage or death. Effects include learning disabilities, shortened attention span, irritability, and lowered IQ.

Lead paint dust from deteriorated lead paint or from renovation is the major source of exposure for children in Maryland. Most childhood exposure occurs through children's normal hand-to-mouth activity after contact with a source of leaded dust.

Most cases of childhood lead poisoning in Maryland are related to deteriorated or damaged residential lead paint, most commonly in old windows and porches. According to the US 2000 census of housing and population, there are about 439,000 residential houses built before 1950 (95% likely to contain lead paint) and 692,000 houses built between 1950-1978 (75% likely to contain lead paint).

Imported products containing lead and parents' occupations or hobbies occasionally present exposure to lead through ingestion or inhalation. Water, air, and soil may provide low-level, "background" exposure but are rarely the cause of childhood lead poisoning.

The most effective prevention of childhood lead poisoning is to reduce or eliminate exposure. Maryland has several on-going efforts to reduce risk of children's lead exposure and to detect lead exposure. These include:

- Enforcement of requirements to perform lead hazard reduction treatments at each turnover in rental housing built before 1950;
- Grants and loans for hazard reduction;
- Locally-based outreach programs to parents, health care providers, and property owners; and
- Targeted intensive outreach for blood lead testing for early detection and early intervention in at-risk areas.

BLOOD LEAD TESTING IN MARYLAND

During CY2001, the following requirements and recommendations about blood lead testing were in effect:

- Mandatory testing of Baltimore City children at age 1 and 2 (Baltimore City Ordinance, June 30, 2000)
- Mandatory blood lead testing at age 1 and 2 of children enrolled in Medicaid (Federal Early Prevention Screening and Detection Treatment or "EPSDT" requirements)

- Mandatory evidence of screening within 30 days of entry into daycare for children aged 0 to 6 years with either a blood lead test or risk assessment questionnaire (Maryland Family Law Article 5-556.1)
- Mandatory testing of children by age 12 months and by age 24 months living in an at-risk area (Maryland Health General Article 18-106, risk areas designated January 2000)
- Recommendations for medical and public health follow-up based on the Centers for Disease Control and Prevention (CDC) guidance in "Screening Young Children for Lead Poisoning, Guidance for State and Local Public Health Officials" and "Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention."

In Maryland, most blood lead testing is ordered by a child's primary care provider. Blood lead specimens are obtained on site at the health care provider office, or more often, performed off-site at a private laboratory center. Some local health departments make free or low-cost testing available at the health department. Testing through the health care provider is preferred so that medical follow-up is integrated with the child's overall health care. Public health follow-up through local health departments is facilitated by MDE reporting to local health departments for all children with blood lead levels of 15 mcg/dL or more regardless of the site of the testing.

The CLR receives reports of blood lead tests only. Currently there is no means to estimate the number of children whose risk of lead exposure may have been evaluated by health care providers with the use of the risk assessment questionnaire.

LABORATORY REPORTING OF TEST RESULTS

Laboratories are required by Environment Article 6-303 to report all blood lead test results on all children 0 -18 years residing in Maryland to the Maryland Childhood Lead Registry. Revised regulations in 2002 updated reporting content details and timelines. Completeness of reporting of required demographics such as child's address or date of birth is now improving, which allows improved timeliness of case management and improved assessment of testing.

MEDICAL AND PUBLIC HEALTH CASE MANAGEMENT

Recommended clinical and public health interventions are tied to different blood lead levels. These are summarized in Table 1. Interventions are based on Maryland statute, state regulations, policy, and guidance documents from CDC.

ASSUMPTIONS AND DEFINITIONS USED FOR THIS ANNUAL REPORT

Child: In Maryland, blood lead test results are reported on children 0 - 18 years. Different groups within that range get more intensive analysis. 0 - 6 years has been the focus of CDC's attention for several years. One and two year olds are the focus of EPSDT testing under Medicaid. Children's age is identified as appropriate for each table.

County and zip code assignment: Zip code assignment of a child is based on the child's address when available. If the child's address is incomplete, zip code assignment is based on the county and zip code of the health care provider who ordered the blood lead test. Zip codes that cross county borders are assigned to the county in which most of the zip code is located.

Elevated blood lead (EBL): Any blood lead level greater than or equal to 10 μg/dL. This includes both finger stick and venous blood lead tests.

Lead poisoning: is a venous blood lead level greater than or equal to 20 μg/dL.

Incidence of EBL: "New" cases of EBL. This was not calculated for CY 2001, as the proportion of incomplete addresses for children in CY 2001 made accurate comparison with CY 2000 difficult.

Prevalence of EBL: Both old and new cases, or all children with EBL in CY 2001. Elevated blood lead can often extend beyond one year. This is especially likely to occur if the child is not relocated to a safe environment so that exposure continues at the original location or begins at a new hazardous location. Children may have sustained elevations for several months to years due to continued exposure to lead and therefore slow (or no) reduction in blood lead level.

Population estimates: Population data for children aged 0 –18 are obtained from the US Department of Commerce, Bureau of Census 2000 data. Estimates for the 2001 population are not yet available from the US Census Bureau, as of October 2002.

Testing: Blood lead testing by finger stick or venous blood test measures lead in blood.

2001 STATEWIDE BLOOD LEAD TESTING PERFORMANCE

The following exhibits show what testing is occurring statewide.

Exhibit 2, " Children 0-6 Years Old By Jurisdiction in 2001" shows a statewide and county breakout of children tested for blood lead as reported to the Childhood Lead Registry. The table shows numbers of children with elevated blood lead levels of 10 μg/dL or more, and children with lead poisoning of 20 μg/dL or more. **Exhibit 2A** shows the numbers of children by the age groups of 0-35 months and 36-72 months.

Exhibit 3, "Testing of Children 0-72 Months 1993-2001, Statewide and Baltimore City" shows a statewide steadily inclining line graph.

Exhibit 4 "Statewide Age-Specific Blood Lead Testing: 1997 –2001" shows blood lead testing of children aged 0-72 months in one year groups over five years.

Exhibit 5 "Blood Lead Testing Among Children 6-17 Years of Age" shows the age and blood lead level distribution for testing in Maryland children aged 7 - 18 years.

Key points on statewide testing

Overall testing increased in 2001. The number and percentage of children aged 0-6 years that received blood lead testing increased for the third consecutive year.

Testing increased in Baltimore City. This is especially important due to the higher risk of exposure experienced by many Baltimore City children.

Testing in one and two year olds shows an increase in 2001 compared to 2000. This shows response to new testing requirements and outreach to parents and providers.

STATEWIDE BLOOD LEAD LEVEL TRENDS OVER TIME

Exhibit 6 "Childhood Blood Lead Surveillance in Maryland: 1993 - 2001 Summary Children 0-72 months", shows summary results for nine years at the State, Baltimore City, and Counties levels.

Exhibit 7 "Trends in Percentage of Children 0-72 Months with Elevated Blood Lead Level: 1993-2001" shows a declining line graph of children with elevated blood lead levels broken down by the entire State including Baltimore City and Baltimore City alone.

Exhibit 8 "Residence And Percent of Children With Elevated Blood Lead (EBL) or Lead Poisoning" shows a bar graph that compares the EBL and lead poisoned rates of children in Baltimore City, other older cities, and the State's counties.

Exhibit 9 "Age-Specific Percent of Children Tested for Lead and Percent with EBL" shows a bar graph of the percent of 1, 2, 3, 4, and 5 year old children tested Statewide with the percentage of those tested who had an EBL.

Key observations on elevated blood lead levels statewide

Prevalence of children with elevated blood lead levels is decreased compared to 2000. Children tested with blood lead levels above 10 μg/dL, CDC's level of concern, decreased to 2,841 or 3.7% of children tested statewide. Children with venous blood lead levels of 20 μg/dL and above, or "lead poisoning", decreased to 288 or 0.4% of children tested statewide.

Prevalence of children with elevated blood lead levels continues to be disproportionately concentrated in Baltimore City and other areas with both old housing and low income on the Eastern Shore and Western Maryland. Of children tested in Baltimore City, 2,027 or 9.5% had blood lead levels of 10 μg/dL or more, and 230 or 1.1% had blood lead levels of 20 μg/dL or more.

Decreased prevalence may be the result of decreased exposure. Much of the decline in blood lead levels or case identification is the result of several years of lead poisoning prevention efforts. Increased enforcement of the state law "Reduction of Lead Risk in Housing", increased awareness by parents and property owners of the hazards of lead poisoning, improved maintenance and prevention of lead exposure, moving away from older housing into more recently built city or suburban housing, and outreach and education to families and health care providers all contribute to fewer children with elevated blood lead levels. The Governor's Lead Initiative of 2000 - 2002 has greatly increased both State and local enforcement efforts in Baltimore City, and added $15 million in funding for lead hazard reduction in targeted high risk areas.

CY 2001 SUMMARY Maryland continues to make progress in reducing lead poisoning in young children. Both the total numbers of children with elevated blood lead levels, and statewide average blood lead levels decreased in 2001. However, lead exposure and lead poisoning continue to occur in significant numbers. Over 2,800 children had blood lead levels above the Centers for Disease Control's level of concern, and 288 children had confirmed lead poisoning. Blood lead testing needs to increase, especially in at-risk areas, to assure that children most likely to have elevated blood lead levels are identified early.

Maryland Childhood Lead Poisoning Prevention Program
Protocol for Prevention, Intervention and Case Management
Table 1

Blood Lead Level	Local Health Department	Health Care Provider	Statewide Law Enforcement(2)
< 9 µg/dL	Anything above zero indicates some exposure or contact with lead. No Community Health Nurse case management services are indicated.	• General education about lead and lead poisoning • Risk Assessment Questionnaire at all routine child health visits • Repeat blood lead level according to protocol	Footnote 2
10 – 14 µg/dL	This is the CDC level of concern. Provide education to decrease exposure, including information about Special Loans Housing Program.	As above plus • Educate to decrease exposure • Track blood lead levels according to CDC protocol	
15 – 19 µg/dL	If capillary test, coordinate with provider and guardian to validate with a venous blood lead level within 1 month. If venous test • Make telephone contact • Make home visit • Provide educational materials to family (mail or in person) • Send Official Notice of Elevated Blood Lead, when applicable, to Tenant and Rental Property Owner • Coordinate with the provider and guardian for follow-up activities, such as housing and follow-up blood tests If two consecutive venous tests between 15-19 µg/dL at least 90 days of each other, treat as next level.	As above plus • Evaluate for iron deficiency • Take environmental history	As in footnote 2, plus MDE enforcement of Lead Risk in Housing law's subsections on Notice of Elevated Blood Lead
20 – 44 µg/dL	If capillary test, coordinate validation of level with a venous blood lead level within 1 week If venous test. • Contact and make a home visit in coordination with the Environmental Lead Sanitarian who will complete an environmental investigation within 10 working days • Discuss with the health care provider possible referral to tertiary care centers specializing in management of childhood lead poisoning • Provide appropriate referrals to other agencies (Social Services, Housing, etc.)	As above plus • Complete medical/nutritional history and physical examination • Obtain developmental / psychological evaluation • Consider chelation consultation	As above, plus MDE and local health department enforcement of • Notice of Violations • Lead Risk in Housing law, subsections on Qualified Offer
≥ 45 µg/dL	If capillary, contact provider within 2 working days. Inform provider to mark all specimens STAT (Highest Priority) and request immediate processing and report from laboratory. If venous, contact provider within 1 working day. Same as above.	As above plus • Consult with lead specialist • Perform urgent chelation	
> 70 µg/dL	Contact the health care provider within 24 hours. If capillary, confirm the result immediately with a STAT venous test. If venous, verify hospitalization as a medical emergency. Same as above.	**Hospitalize: Medical emergency**:	

1) Maryland Department of the Environment (MDE) Protocol, based on Centers for Disease Control and Prevention (CDC) protocol
2) Environment Article §6-8, "Reduction of Lead Risk in Housing" subsections on Rental Property Registration, Risk Reduction Treatments at Turnover and Notice of Defect are ongoing primary prevention activities not triggered by blood lead levels.

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Testing of Children 0-72 months by Jurisdiction in 2001
Exhibit 2

	Population of children 0-72 months old[1]	Children Tested[2]		Children with Elevated Blood Lead Level[3]		Children with Lead Poisoning[4]	
County		Number	Percent	Number	Percent	Number	Percent
Allegany	4,529	1,025	22.6	32	3.1	4	0.4
Anne Arundel	39,998	5,224	13.1	40	0.8	3	0.1
Baltimore	54,630	7,090	13.0	99	1.4	6	0.1
Baltimore City	50,380	21,231	42.1	2,027	9.5	230	1.1
Calvert	6,222	785	12.6	8	1.0	1	0.1
Caroline	2,275	513	22.5	39	7.6	4	0.8
Carroll	12,376	970	7.8	17	1.8	0	0.0
Cecil	7,212	964	13.4	8	0.8	2	0.2
Charles	10,533	1,597	15.2	10	0.6	1	0.1
Dorchester	2,011	348	17.3	44	12.6	5	1.4
Frederick	17,072	1,335	7.8	14	1.0	1	0.1
Garrett	2,222	283	12.7	4	1.4	0	0.0
Harford	19,138	1,924	10.1	16	0.8	1	0.1
Howard	22,252	1,348	6.1	13	1.0	0	0.0
Kent	1,094	299	27.3	2	0.7	0	0.0
Montgomery	72,419	12,148	16.8	66	0.5	3	0.0
Prince George's	70,191	13,735	19.6	100	0.7	7	0.1
Queen Anne's	3,163	312	9.9	7	2.2	0	0.0
Saint Mary's	7,652	1,046	13.7	11	1.1	0	0.0
Somerset	1,441	539	37.4	48	8.9	2	0.4
Talbot	2,148	369	17.2	30	8.1	4	1.1
Washington	9,784	1,558	15.9	24	1.5	4	0.3
Wicomico	6,424	1,463	22.8	134	9.2	6	0.4
Worcester	2,773	595	21.5	48	8.1	4	0.7
County Unknown		41		0		0	
Statewide	**427,939**	**76,742**	**17.9**	**2,841**	**3.7**	**288**	**0.4**

1. US Census Bureau, Census 2000 population count. At the time of this report the age-sex population-estimate for counties for calendar year 2001 was not yet available from the US Census Bureau. Counts for blood lead tests are final. Percent results may change after the US Census Bureau releases the age-sex population- estimate for counties for calendar year 2001.
2. Blood lead reports with missing or wrong date of birth were assumed to be from children under six (6) year of age with exact age unknown.
3. Defined as venous or capillary blood lead level ≥10 μg/dL.
4. Defined as venous blood lead level ≥20 μg/dL.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Testing of Children 0-72 Months by Jurisdiction and Major Age Group in 2001
Exhibit 2A

	Population of children[1]	Children Tested[2]		Children with Elevated Blood Lead Level[3]		Children with Lead Poisoning[4]	
Age group		Number	Percent	Number	Percent	Number	Percent
Allegany County							
0-35 months	2,251	879	39.0	25	2.8	4	0.5
36-72 months	2,278	140	6.1	6	4.3	0	0.0
Age Unknown		6		1		0	
Total	4,529	1,025	22.6	32	3.1	4	0.4
Anne Arundel County							
0-35 months	19,741	4,161	21.1	35	0.8	3	0.1
36-72 months	20,257	1,019	5.0	5	0.5	0	0.0
Age Unknown		43		0		0	
Total	39,998	5,223	13.1	40	0.8	3	0.1
Baltimore County							
0-35 months	26,746	5,571	20.8	78	1.4	3	0.1
36-72 months	27,884	1,451	5.2	20	1.4	3	0.2
Age Unknown		67		1		0	
Total	54,630	7,089	13.0	99	1.4	6	0.1
Baltimore City							
0-35 months	25,207	14,479	57.4	1,136	7.8	145	1.0
36-72 months	25,173	6,372	25.3	873	13.7	85	1.3
Age Unknown		379		18		0	
Total	50,380	21,230	42.1	2,027	9.5	230	1.1
Calvert County							
0-35 months	2,938	620	21.1	5	0.8	1	0.2
36-72 months	3,284	158	4.8	3	1.9	0	0.0
Age Unknown		7		0		0	
Total	6,222	785	12.6	8	1.0	1	0.1

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Blood Lead testing of children 0-72 months by jurisdiction and major age group in 2001

	Population of children[1]	Children Tested[2]		Children with Elevated Blood Lead Level[3]		Children with Lead Poisoning[4]	
Age group		Number	Percent	Number	Percent	Number	Percent
Caroline County							
0-35 months	1,032	391	37.9	26	6.6	3	0.8
36-72 months	1,243	122	9.8	13	10.7	1	0.8
Age Unknown		0		0		0	
Total	2,275	513	22.5	39	7.6	4	0.8
Carroll County							
0-35 months	5,831	727	12.5	13	1.8	0	0.0
36-72 months	6,545	238	3.6	4	1.7	0	0.0
Age Unknown		5		0		0	
Total	12,376	970	7.8	17	1.8	0	0.0
Cecil County							
0-35 months	3,493	662	19.0	8	1.2	2	0.3
36-72 months	3,719	299	8.0	0	0.0	0	0.0
Age Unknown		3		0		0	
Total	7,212	964	13.4	8	0.8	2	0.2
Charles County							
0-35 months	5,062	1,105	21.8	6	0.5	0	0.0
36-72 months	5,471	485	8.9	4	0.8	1	0.2
Age Unknown		5		0		0	
Total	10,533	1,595	15.1	10	0.6	1	0.1
Dorchester County							
0-35 months	973	257	26.4	28	10.9	3	1.2
36-72 months	1,038	90	8.7	16	17.8	2	2.2
Age Unknown		0		0		0	
Total	2,011	347	17.3	44	12.7	5	1.4

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Blood Lead testing of children 0-72 months by jurisdiction and major age group in 2001

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Age group		Number	Percent	Number	Percent	Number	Percent
Frederick County							
0-35 months	8,218	981	11.9	11	1.1	1	0.1
36-72 months	8,854	352	4.0	3	0.9	0	0.0
Age Unknown		2		0		0	
Total	17,072	1,335	7.8	14	1.0	1	0.1
Garrett							
0-35 months	1,074	216	20.1	3	1.4	0	0.0
36-72 months	1,148	66	5.7	0	0.0	0	0.0
Age Unknown		1		1		0	
Total	2,222	283	12.7	4	1.4	0	0.0
Harford County							
0-35 months	9,196	1,419	15.4	12	0.8	1	0.1
36-72 months	9,942	489	4.9	4	0.8	0	0.0
Age Unknown		16		0		0	
Total	19,138	1,924	10.1	16	0.8	1	0.1
Howard County							
0-35 months	10,559	892	8.4	11	1.2	0	0.0
36-72 months	11,693	452	3.9	1	0.2	0	0.0
Age Unknown		4		1		0	
Total	22,252	1,348	6.1	13	1.0	0	0.0
Kent County							
0-35 months	550	196	35.6	1	0.5	0	0.0
36-72 months	544	82	15.1	0	0.0	0	0.0
Age Unknown		21		1		0	
Total	1,094	299	27.3	2	0.7	0	0.0

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Age group		Number	Percent	Number	Percent	Number	Percent
Montgomery County							
0-35 months	35,779	7,947	22.2	37	0.5	2	0.0
36-72 months	36,640	4,148	11.3	28	0.7	1	0.0
Age Unknown		46		1		0	
Total	72,419	12,141	16.8	66	0.5	3	0.0
Prince George's County							
0-35 months	34,246	8,514	24.9	53	0.6	1	0.0
36-72 months	35,945	5,152	14.3	47	0.9	6	0.1
Age Unknown		66		0		0	
Total	70,191	13,732	19.6	100	0.7	7	0.1
Queen Anne's County							
0-35 months	1,529	234	15.3	6	2.6	0	0.0
36-72 months	1,634	77	4.7	1	1.3	0	0.0
Age Unknown		1		0		0	
Total	3,163	312	9.9	7	2.2	0	0.0
Saint Mary's County							
0-35 months	3,693	854	23.1	9	1.1	0	0.0
36-72 months	3,959	177	4.5	2	1.1	0	0.0
Age Unknown		13		0		0	
Total	7,652	1,044	13.6	11	1.1	0	0.0
Somerset County							
0-35 months	698	393	56.3	33	8.4	2	0.5
36-72 months	743	146	19.7	15	10.3	0	0.0
Age Unknown		0		0		0	
Total	1,441	539	37.4	48	8.9	2	0.4

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Age group		Number	Percent	Number	Percent	Number	Percent
Talbot County							
0-35 months	996	277	27.8	20	7.2	2	0.7
36-72 months	1,152	91	7.9	10	11.0	2	2.2
Age Unknown		1		0		0	
Total	2,148	369	17.2	30	8.1	4	1.1
Washington County							
0-35 months	4,827	1,197	24.8	16	1.3	3	0.3
36-72 months	4,957	359	7.2	8	2.2	1	0.3
Age Unknown		2		0		0	
Total	9,784	1,558	15.9	24	1.5	4	0.3
Wicomico County							
0-35 months	3,176	1,174	37.0	107	9.1	5	0.4
36-72 months	3,248	287	8.8	27	9.4	1	0.3
Age Unknown		0		0		0	
Total	6,424	1,461	22.7	134	9.2	6	0.4
Worcester County							
0-35 months	1,403	454	32.4	43	9.5	4	0.9
36-72 months	1,370	138	10.1	5	3.6	0	0.0
Age Unknown		2		0		0	
Total	2,773	594	21.4	48	8.1	4	0.7
Statewide							
0-35 months	209,218	53,631	25.6	1,722	3.2	185	0.3
36-72 months	218,721	22,400	10.2	1,095	4.9	103	0.5
Age Unknown		690		24		0	
Total[5]	427,939	76,721	17.9	2,841	3.7	288	0.4

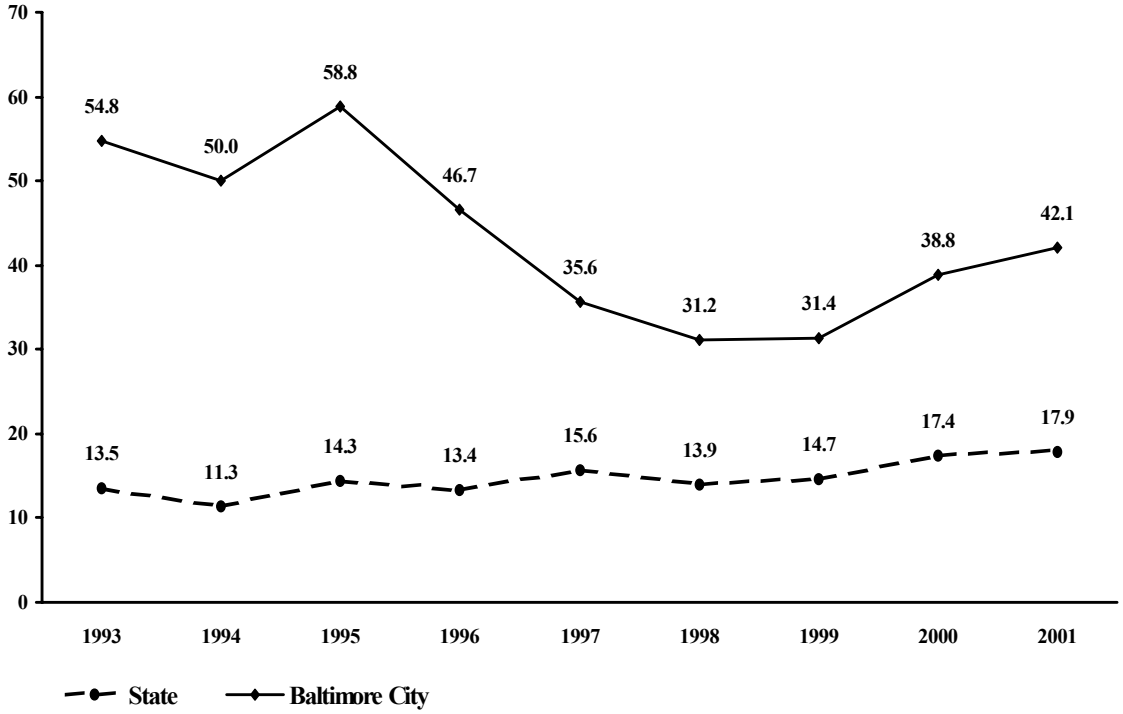
1. US Census Bureau, Census 2000 population count. At the time of this report the age-sex population-estimate for counties for calendar year 2001 was not yet available from the US Census Bureau. Counts for blood lead tests are final. Percent results may change after the US Census Bureau releases the age-sex population- estimate for counties for calendar year 2001.
2. Blood lead reports with missing or wrong date of birth were assumed to be from children under six (6) year of age. They were counted under "Age Unknown".
3. Defined as venous or capillary blood lead level ≥10 μg/dL.
4. Defined as venous blood lead level ≥20 μg/dL.
5. State total includes 41 children with county unknown of whom 31 were 0-35, and 10 were 36-72 months old.

Maryland Department of the Environment
Lead Poisoning Prevention Program: Childhood Lead Registry

Testing of Children 0-72 Months: 1993-2001

Statewide and Baltimore City

Exhibit 3



Note: Up to 1995, records with no address were assigned to Baltimore City. From 1996 forward, records with no address were assigned to county of the health care provider.

Lead Poisoning Prevention Program: Childhood Lead Registry
Statewide Age- Specific Blood Lead Testing: 1997-2001
Exhibit 4

	1997			1998			1999			2000			2001		
Age Group	Population of Children	Number of Children Tested	Percent Tested	Population of Children	Number of Children Tested	Percent Tested	Population of Children	Number of Children Tested	Percent Tested	Population of Children	Number of Children Tested	Percent Tested	Population of Children	Number of Children Tested	Percent Tested
							Statewide								
Under One	69,214	9,981	14.4	68,230	8,121	11.9	69,852	9,687	13.9	69,647	9,486	13.6	69,647	10,314	14.8
1 Year	67,909	17,373	25.6	67,750	15,870	23.4	68,706	18,894	27.5	70,265	23,741	33.8	70,265	26,671	38.0
2 Year	68,417	12,699	18.6	67,731	10,743	15.9	68,734	11,881	17.3	69,306	15,000	21.6	69,306	16,646	24.0
3 Year	69,652	9,772	14.0	69,064	7,966	11.5	68,702	7,917	11.5	71,154	9,424	13.2	71,154	9,488	13.3
4 Year	71,756	9,123	12.7	71,287	7,821	11.0	70,864	7,527	10.6	73,021	8,383	11.5	73,021	8,116	11.1
5 Year	74,249	5,656	7.6	72,423	5,034	7.0	72,054	4,619	6.4	74,546	5,353	7.2	74,546	4,796	6.4
Age Unknown		1,365			3,030			1,004			3,129			711	
Total	**421,197**	**65,969**	**15.7**	**416,485**	**58,585**	**14.1**	**418,912**	**61,529**	**14.7**	**427,939**	**74,516**	**17.4**	**427,939**	**76,742**	**17.9**

Notes and definitions:

1. Populations for 1997-1999 are based on annual age (single year)- sex specific estimate for states and counties by the US Census Bureau. Population for 2000 is from US Census Bureau 2000 population count. The 2000 population count is repeated for 2001, due to unavailability of the 2001 population estimates from the US Census Bureau as of 11/2002. Percent results for 2001 may change after the US Census Bureau releases the age-sex population- estimate for counties for calendar year 2001.
2. Number of screening is based on the highest venous or the highest capillary blood lead test that the Childhood Lead Registry (CLR) received from laboratories for a given child in 1997-2001. For each calendar year, each child is counted only once. Over the years, however a child may have been counted more than once.
3. Blood lead reports with no or inaccurate date of birth were assumed to be from children under six (6) years of age.
4. County assignment is based on child's zip code address. In cases with no or wrong address, provider's zip code was the basis of county determination. In about 30% of blood lead reports county assignment is based on provider's zip code.
5. For information on age specific elevated blood lead level (EBL), or lead poisoning refer to the supplementary data tables of the CLR Annual Reports for each calendar year.

Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Testing Among Children 6-17 Years of Age Statewide
(As reported to Childhood Lead Registry for 01/01/2001-12/31/2001)
Exhibit 5

		Children tested		Children with Elevated Blood Lead*		Children with Lead Poisoning**	
Age (Year)	**Population**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
6 Years	75,472	2,885	3.8	134	4.6	6	0.2
7 Years	78,537	1,749	2.2	72	4.1	5	0.3
8 Years	80,380	1,372	1.7	39	2.8	4	0.3
9 Years	82,383	1,105	1.3	36	3.3	0	0.0
>=10 Yrs.	680,208	3,863	0.6	68	1.8	5	0.1
Total	996,980	10,974	1.1	349	3.2	20	0.2

* Blood lead level ≥10 μg/dL.
**Venous blood lead level ≥20 μg/dL.

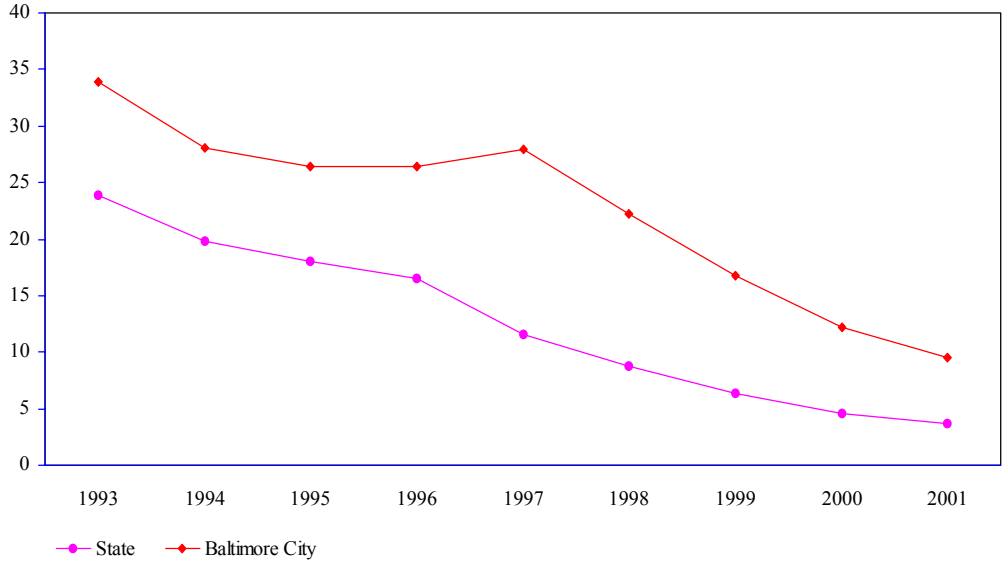
Childhood Blood Lead Surveillance in Maryland: 1993-2001
Children Aged 0-72 Months
Exhibit 6

Calendar Year		Population of Children	Blood Lead Test		Elevated Blood Lead		Lead Poisonings	
			Number	Percent	Number	Percent	Number	Percent
1993								
	City	69,434	38,030	54.8	12,908	33.9	1,850	4.9
	Counties	381,753	22,882	6.0	1,638	7.2	54	0.2
	Total	451,187	60,912	13.5	14,546	23.9	1,904	3.1
1994								
	City	65,255	32,620	50.0	9,168	28.1	1,635	5.0
	Counties	384,720	19,771	5.1	1,209	6.1	156	0.8
	Total	452,975	52,391	11.6	10,377	19.8	1,791	3.4
1995								
	City	65,958	38,794	58.8	10,258	26.4	1,633	4.2
	Counties	383,210	25,600	6.7	1,327	5.2	199	0.8
	Total	449,168	64,394	14.3	11,585	18.0	1,832	2.8
1996								
	City	60,834	29,630	48.7	7,816	26.4	1,646	5.6
	Counties	369,538	27,006	7.3	1,264	4.7	160	0.6
	Unknown		3,110		804		24	
	Total	430,372	59,746	13.9	9,884	16.5	1,830	3.1
1997								
	City		21,423	36.8	5,983	27.9	1030	4.8
	Counties	362,935	44,546	12.3	1654	3.7	202	0.5
	Unknown		1,149		126		1	
	Total	421,197	67,118	15.9	7,763	11.6	1233	1.8
1998								
	City	56,759	17,753	31.3	3,949	22.2	669	3.8
	Counties	359,726	40,164	11.1	1,082	2.7	103	0.3
	Unknown		668		37		0	
	Total	416,485	58,585	14.1	5,068	8.7	772	1.3
1999								
	City	55,401	17,414	31.4	2,902	16.7	446	2.6
	Counties	363,511	43,524	12.0	925	2.1	102	0.2
	Unknown		591		77		7	
	Total	418,912	61,529	14.7	3,9046.3	6.3555	555	0.9
2000								
	City	50,380	18,033	36.8	2,198	12.2	266	1.5
	Counties	377,559	51,210	13.6	847	1.7	85	0.2
	Unknown		5,273		357		2	
	Total	427,939	74,516	17.4	3,402	4.6	353	0.5
2001								
	City	50,380	21,231	42.1	2,027	9.5	230	1.1
	Counties	377,559	55,470	14.7	814	1.5	58	0.1
	Unknown		41		0		0	
	Total	427,939	76742	17.9	2,841	3.7	288	0.4

Notes:

1. Population of children for 1993-1999 is based on US Census Bureau annual age-sex population estimate for state and counties. Population for 2000 is from US 2000 population count, as the Census Bureau did not release population estimate for 2001 by 11/2002.
2. Elevated blood lead is defined as a venous or a capillary blood lead level ≥10 μg/dL.
3. Lead poisoning is defined as a venous blood lead level ≥20 μg/dL.
4. City/county assignment is based on zip code address. USPS zip code county file was used for the assignment. In the absence of a valid zip code, the jurisdiction was considered unknown.

Maryland Department of the Environment
Lead Poisoning Prevention Program: Childhood Lead Registry
Trends of Percent of Tested Children with Elevated Blood Lead Level (EBL): 1993 – 2001
Exhibit 7

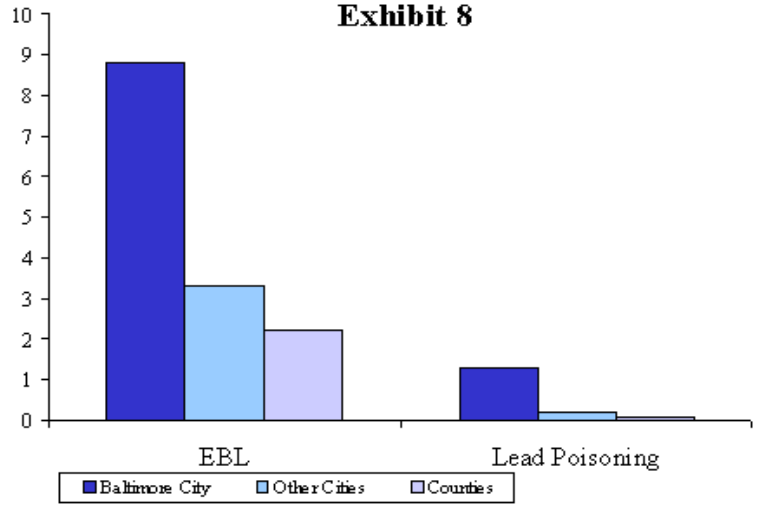


EBL: Blood lead level ≥10 µg/dL

Lead Poisoning Prevention Program: Childhood Lead Registry

Residence and Percent of Children with Elevated Blood Lead (EBL) or Lead Poisoning (CLR 2001 data)

Exhibit 8

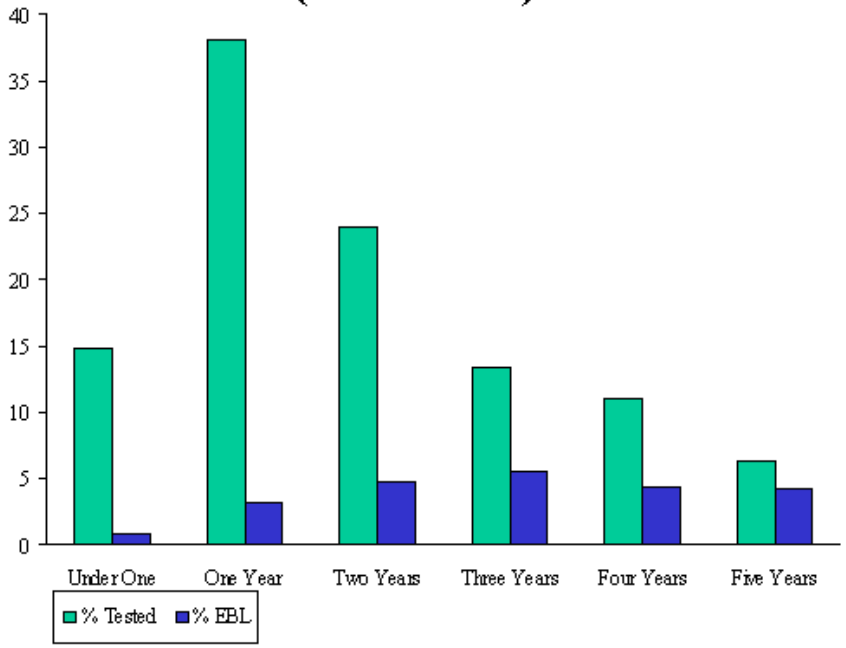


Notes:
Other cities are Annapolis, Cumberland, Frederick, Hagerstown, Salisbury, and Westminster.
EBL = Blood lead level >=10 µg/dL.

Maryland Department of the Environment
Lead Poisoning Prevention Program: Childhood Lead Registry

Age Specific Percent of Children Tested for Lead and Percent with EBL

(CLR2001 data)



EBL: Elevated Blood Lead level ((blood lead level ≥10 μg/dL)