MARYLAND

Department of the Environment

LEAD POISONING PREVENTION COMMISSION

SUBMITTED ON BEHALF OF
THE LEAD POISONING PREVENTION COMMISSION

BY THE
MARYLAND DEPARTMENT OF THE ENVIRONMENT

Prepared for:
Lawrence J. Hogan, Jr., Governor
State of Maryland

Boyd K. Rutherford, Lt. Governor
State of Maryland

2018 Annual Report

MARYLAND DEPARTMENT OF THE ENVIRONMENT
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Lawrence J. Hogan, Jr., Governor | Boyd K. Rutherford, Lt. Governor | Ben Grumbles, Secretary

STATE OF MARYLAND
Lead Poisoning Prevention Commission

March 28, 2019

The Honorable Lawrence J. Hogan, Jr.
Governor of Maryland
Executive Department
State House
Annapolis MD 21401

Dear Governor Hogan:

On behalf of the Maryland Lead Poisoning Prevention Commission, I am submitting the Lead Poisoning Prevention Commission's Annual Report for Calendar Year 2018 as required by the annotated Code of Maryland, Environmental Article §6-810.

Sincerely,

Pat McLaine

Patricia McLaine, DrPH, MPH, RN
Chairman
Lead Poisoning Prevention Commission

PM:pgl

Enclosures

Maryland Department of the Environment
1800 Washington Blvd., Baltimore MD 21230
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2018
ANNUAL REPORT
LEAD POISONING PREVENTION COMMISSION

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

LEAD POISONING PREVENTION COMMISSION OVERVIEW

The Lead Poisoning Prevention Commission, established under Environment Article 6, Subtitle 8, advises the Department of the Environment, the Legislature, and the Governor regarding lead poisoning prevention in Maryland.

COMMISSION MEMBERSHIP

The Lead Poisoning Prevention Commission consists of 19 members. Of the 19 members:

(i) One shall be a member of the Senate of Maryland, appointed by the President of the Senate;
(ii) One shall be a member of the Maryland House of Delegates, appointed by the Speaker of the House; and
(iii) 17 shall be appointed by the Governor as follows:

1. The Secretary or the Secretary's designee;
2. The Secretary of Health and Mental Hygiene or the Secretary's designee;
3. The Secretary of Housing and Community Development or the Secretary's designee;
4. The Maryland Insurance Commissioner or the Commissioner's designee;
5. The Director of the Early Childhood Development Division, State Department of Education, or the Director's designee;
6. A representative of local government;
7. A representative from an insurer that offers premises liability coverage in the State;
8. A representative of a financial institution that makes loans secured by a rental property;
9. A representative of owners of rental property located in Baltimore City built before 1950;
10. A representative of owners of rental property located outside Baltimore City built before 1950;
11. A representative of owners of rental property built after 1949;
12. A representative of child health or youth advocacy group;
13. A health care provider;
14. A child advocate;
15. A parent of a lead poisoned child;
16. A lead hazard identification professional; and
17. A representative of child care providers.

In appointing members to the Commission, the Governor shall give due consideration to appointing members representing geographically diverse jurisdictions across the State.

The term of a member appointed by the Governor is 4 years. A member appointed by the President and Speaker serves at the pleasure of the appointing officer. The terms of members are staggered as required by the terms provided for the members of the Commission on October 1, 1994. At the end of a term, a member continues to serve until a successor is appointed and qualifies. A member who is appointed after a term has begun serves only for the remainder of the term and until a successor is appointed and qualifies. (1994, ch.114, § 1; 1995, ch. 3, § 1; 2001, ch. 707; 2006, ch.44.)

COMMISSION RESPONSIBILITIES

1. The Commission shall study and collect information on:

   - The effectiveness of legislation and regulations protecting children from lead poisoning and lessening risks to responsible property owners;
   - The effectiveness of the full and modified lead risk reduction standards, including recommendations for changes;
   - Availability and adequacy of third-party insurance covering lead liability, including lead hazard exclusion and coverage for qualified offers;
   - The ability of state and local officials to respond to lead poisoning cases;
   - The availability of affordable housing;
   - The adequacy of the qualified offer caps;
   - The need to expand the scope of this subtitle to other property serving persons at risk, including child care centers, family day care homes, and preschool facilities.

2. The Commission may appoint subcommittees to study subjects relating to lead and lead poisoning.

3. The Commission shall give consultation to the Department in developing regulations to implement Environment Article 26.16 (House Bill 760).

4. The Commission will prepare or participate in the preparation of the following reports:

   - Assist MDE and HCD to study and report on methods for pooling insurance risks, with recommendations for legislation as appropriate by January 1, 1995;
   - Develop recommendations in consultation with the Department of Housing and Community Development (HCD) by January 1, 1996, for a financial incentive or assistance program for window replacement in affected properties;
   - Provide an annual review of the implementation and operation of the Lead Poisoning Prevention Program under HB 760, beginning January 1, 1996.

COMMISSION MEETINGS

Frequency, times and places. - The Commission shall meet at least quarterly at the times and places it determines.

Chairman. – From among the members, the Governor shall appoint the Chairman of the Commission.

Quorum. – A majority of the members then serving on the Commission constitutes a quorum.

The Commission may act upon a majority vote of the quorum.

Compensation; expenses. A member of the Commission:
(1) May not receive compensation; but
(2) Is entitled to reimbursement from the Fund for reasonable travel expenses related to attending meetings and other Commission events in accordance with the Standard State Travel Regulations. (1994, ch. 114, § 1.)

LEAD POISONING PREVENTION COMMISSION MEMBERS

NAME	MEMBER CATEGORY
Shana G. Boscak	Parent of a Lead Poisoned Child
Benita A. Cooper	The Maryland Insurance Commissioner or the Commissioner's designee
Anna L. Davis, JD MPH	Child Advocate
Mary Beth Haller	Local Government
Susan DiGaetano-Kleinhammer	Lead Hazard Identification Professional
John P. Martonick	A representative of owners of rental property located outside Baltimore City built before 1950
Patricia McLaine, RN, MPH	Representative of Child Health/Youth Advocate Group
Clifford Mitchell, M.D.	Designee for the Secretary of the Maryland Department of Health
Paula Montgomery	The Secretary or the Secretary's Designee for MDE
Barbara Moore, MSN, RN, CPNP	Health Care Provider
Leonidas A. Newton	Representative of owners of rental property built after 1949
Manjula Paul	The Director of the Early Childhood Development Division, State Department of Education, or the Director's designee
Christina Peusch	A representative of child care providers
Adam D. Skolnik	A representative of owners of rental property located in Baltimore City built before 1950
John J. Scott, Jr.	A representative from an insurer that offers premises liability coverage in the State
VACANT	Designee for the Secretary of the Department of Housing and Community Development

VACANT	A representative of a financial institution that makes loans secured by a rental property
LEGISLATIVE REPRESENTATIVES	
VACANT	Senate of Maryland
VACANT	Maryland House of Delegates
DEPARTMENT OF THE ENVIRONMENT STAFF	
Pet Grant-Lloyd, Administrative Aide Maryland Department of the Environment Land and Materials Administration Lead Poisoning Prevention Program 1800 Washington Boulevard Baltimore, MD 21230-1719	Tel: (410) 537-3825 , 410-537-3847 Fax: (410) 537-3156 email: pet.grant-lloyd@maryland.gov

LEAD COMMISSION ROSTER

Please check one:

X **YES** – 50% COMPLIANCE MET **NO** – 50% NOT MET ☐

50% compliance met for all commissioners except John Scott, Jr. and Shana Boscak.

BOARD NAME: <u>GOVERNOR'S LEAD POISONING PREVENTION COMMISSION</u>

CALENDAR YEAR 2018

MEMBER NAME	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	% OF ATTENDANCE
BOSCAK					✓			✓					20%
COOPER		✓	✓		✓	✓		✓					50%
DAVIS		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	100%
HALLER		✓	✓	✓	✓	✓			✓				60%
KLEINHAMMER		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	100%
MARTONICK					✓			✓		✓		✓	50%
MCLAINE		✓	✓	✓	✓	✓		✓	✓	✓		✓	90%
MITCHELL		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	100%
MONTGOMERY			✓	✓	✓	✓		✓	✓	✓	✓	✓	90%
MOORE		✓	✓	✓	✓	✓		✓	✓		✓	✓	90%
NEWTON			✓	✓				✓	✓	✓		✓	60%
SEN. OAKS													0%
PAUL		✓		✓	✓	✓		✓	✓	✓		✓	80%
PEUSCH		✓	✓	✓				✓		✓	✓	✓	70%

SCOTT													0%
SKOLNIK		✓	✓	✓	✓			✓		✓	✓	✓	80%

The Commission held __10_ meetings in 2018, February, March, April, May, June, August, September, October, November and December.

The commission did not meet in January due to inclement weather and in July due to a majority decision by the members to cancel the July meeting.

After consultation with member(s) not meeting 50% attendance, we recommend the following actions:

Name 1__John Scott, Jr.________________ Waiver request attached: Yes___ No_X__
Letter of resignation is attached.

Name 2__Shana Boscak________________ Waiver request attached: Yes_X__ No___

Waiver of cause not recommended:

Name 1______________________________ Reason for denial______________________________
Name 2______________________________ Reason for denial______________________________

Other, please explain

MARYLAND

Pet Grant-Lloyd -MDE- <pet.grant-lloyd@maryland.gov>

RE: 2018 Attendance - Lead Poisoning Prevention Commission

1 message

John Scott <jscott@westminsteramerican.com> Tue, Mar 26, 2019 at 3:01 PM
To: "McLaine, Patricia" <mclaine@umaryland.edu>
Cc: "Pet Grant-Lloyd -MDE- [pet.grant-lloyd@maryland.gov]" <pet.grant-lloyd@maryland.gov>, Paula Montgomery -MDE- <paula.montgomery@maryland.gov>, "shante.branch@maryland.gov" <shante.branch@maryland.gov>

Hi Pat:

Thank you so much for your email. My schedule with Westminster American continues to make it impossible for me to attend the Thursday meetings. I really don't think that I should continue with the Commission as I haven't attended even one of the meetings in the last year. I know there aren't other insurance professionals lining up for my spot, but I still feel that I am neglecting a responsibility that I have to the state and to my fellow members. To that end, I would like to resign my position as a member of the Commission effective immediately.

As I've stated in the past, I am always available to you or any member of the community to discuss the insurance industry's position on lead coverage in Maryland.

You do great things for our community! It has been an honor to serve on the Commission with you!

John

John J. Scott, Jr.

President & CEO

Westminster American Insurance Company

8890 McDonogh Road, Suite 310

Owings Mills, Maryland 21117

Direct: 443-291-4045

Main: 443-291-4040

jscott@westminsteramerican.com

MARYLAND

Pet Grant-Lloyd -MDE- <pet.grant-lloyd@maryland.gov>

Re: Board Commission

shagreen@umich.edu <shagreen@umich.edu> Wed, Mar 27, 2019 at 5:05 PM
To: "McLaine, Patricia" <mclaine@umaryland.edu>
Cc: "Pet Grant-Lloyd -MDE- [pet.grant-lloyd@maryland.gov]" <pet.grant-lloyd@maryland.gov>

Dear Pat,

I'm sorry it has taken me a bit to get back to you! I am planning on attending the Upcoming meeting on April 4th, but have been unable to attend meetings regularly through the past year. I have several part time jobs, and do not have much choice in my schedule. Unfortunately, Thursdays have been a very challenging day for me, and there were long periods I've been unable to come on most Thursday's during the month.

I am able to come on Thursdays starting in April and plan to attend throughout the summer. However, I am currently pregnant and will likely not be able to attend after my due date in mid-September 2019.

I have enjoyed my involvement with the Commission, and will be happy to continue through the summer. However it is possible I may need to resign my appointment in the Fall.

Best,
Shana Boscak

On Mar 18, 2019, at 2:29 PM, McLaine, Patricia <mclaine@umaryland.edu> wrote:

> Shana,
>
> We need an email from you regarding your attendance. If you have questions, or aren't sure what to write, please call me. I know you are interested in continuing and we are very interested in your doing so too!
>
> Thank you,
>
> Pat

Pat McLaine, DrPH, MPH, RN

Assistant Professor and Specialty Director, Community Public Health Nursing

University of Maryland School of Nursing

Department of Family and Community Health

655 West Lombard Street, 655 B

Baltimore, MD 21201

410-706-5868

443-520-9678 – cell

410-706-0253 – FAX

mclaine@umaryland.edu - please note my new email!

FEBRUARY 1, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

February 1, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L. ALD	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
McLAINE, Patricia	Child Health/Youth Advocate	
MITCHELL, Cliff By phone am/pm	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee	
MOORE, Barbara By phone BM/pm	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
OAKS, Nathaniel (Senator)	Maryland Senate	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Property Owner Pre 1950 Outside Baltimore City	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	

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GUESTS

Governor's Lead Commission Meeting Attendance Sheet

February 1, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Lan VanDe Hei	MDE WSP	lan.vandehei@maryland.gov
Shante Branch	MDE LPPP	Shante.Branch@maryland.gov
Jack Daniels	DHCD	jack.daniels2@maryland.gov
Yvache Templeton	GHHI	ytempleton@ghhi.org
Ludeen Green	GHHI	
Benita Cooper	MIA	benita@maryland.gov
Lisa Horne	GHHI	

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, February 1, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
Commission letters regarding CHIP reauthorization

III. New Business
MDE Rental Registry Quarterly Update
2018 Lead Legislation
Planning for 2018

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, February 1, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
- A. Maryland Department of the Environment
- B. Maryland Department of Health
- C. Maryland Department of Housing and Community Development
- D. Baltimore City Health Department
- E. Baltimore City Department of Housing and Community Development
- F. Office of Childcare
- G. Maryland Insurance Administration
- H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
February 1, 2018

APPROVED Minutes

Members in Attendance
Anna L. Davis, Benita Cooper, Mary Beth Haller, Susan Kleinhammer, Patricia McLaine, Cliff Mitchell (via phone), Barbara Moore (via phone), Manjula Paul, Christina Peusch, Adam Skolnik

Members not in Attendance
Shana G. Boscak, Paula Montgomery, Leonidas Newton, Sen. Nathaniel Oaks, John Scott

Guests in Attendance
Shante Branch (MDE), Jack Daniels (DHCD), Ludeen Green (GHHI), Lan Van De Hei (MDE) Rachel Hess Mutinda (MDH [via phone]), Lisa Horne (DHHK) Ruth Ann Norton (GHHI), Marché Templeton (GHHI)

Welcome and Introductions
Pat McLaine called the meeting to order at 9:35 AM with welcome and introductions. New Commissioner Benita Cooper, Assistant Chief at Maryland Insurance Administration, introduced herself; she manages a staff of investigators managing complaints, identifies trends for new legislation and oversees disaster response. New MDE Program Manager Shante Branch also introduced herself; she is from Baltimore, oversaw the family advocacy program at GHHI for three years and has experience in addictions and mental health.

Approval of Minutes
A motion was made by Susan Kleinhammer, seconded by Adam Skolnik to accept the minutes as amended. All present Commissioners were in favor.

Old Business
Pat McLaine reported that letters went out to the Federal Congressional Delegation regarding the reauthorization of the Child Health Insurance Program (CHIP). One response was received from Steny Hoyer. Cliff Mitchell indicated he was unsure how the reauthorization would impact Maryland's program going forward but Maryland Department of Health is cautiously optimistic.

New Business
MDE's rental registry report was not available.

Lead Legislation - Anna Davis led the review of six pieces of lead legislation currently pending in the Maryland General Assembly.

1. HB 304 – Reduction of Lead Risk In Housing – Elevated Blood Lead Levels – in first reading, Environment and Transportation Committee. GHHI distributed a handout "10 to 5 So Kids Can Thrive!" The bill would lower level for case management, including environmental investigation, from 10 to 5µg/dL. CDC proposed this change in 2012 and it has already been adopted by North Carolina, New Jersey and Maine. Baltimore City is already providing follow-up at this level but environmental investigations are not being done across the state. Adam Skolnik suggested the bill should reference a "reference level" rather than 5µg/dL, which is likely to change. He noted that the focus of Maryland law has not been changed greatly to reflect the extent that poisoning is occurring in owner occupied as well as rental properties. He also indicated that if the investigation finds that the child was not poisoned from the house, the bill requires rental property owners to do a modified risk reduction, which is not reasonable. Ruth Ann Norton stated that MDE is interested in addressing this if there is no proven other source; Maryland must address this issue to save money and protect the future capacity for children living in Maryland. Susan Kleinhammer asked for information about the safety of children in owner occupied property vs rental property, suggesting that the law should apply to all at-risk properties. It is not clear what is being done by other states in terms of requiring housing remediation for rental and owner-occupied housing. Cliff Mitchell stated that Baltimore City is choosing to visit children with 5-9µg/dL BLLs; there is not a state mandate. Maryland Department of Health (MDH) requires health care providers to follow up on children with 5-9µg/dL BLLs but there is no requirement for jurisdictions to provide case management follow-up. The Childhood Lead Registry has been reporting on 5-9µg/dL BLLs for local jurisdictions for several years. Adam Skolnik stated he has concerns about false positive BLLs identified with the hand-held analyzers that are calibrated to 3µg/dL plus or minus 4µg/dL. GHHI has proposed amendments giving Local Health Department sanitarians ability to inspect owner occupied and rental properties. The Committee had two concerns: that the bill should target the reference level, not a level of 5µg/d and that the requirement should apply to owner-occupied properties as well as rental properties. Cliff Mitchell stated that MDE and MDH have looked at information regarding the identified sources in cases reported 2016 and sources are complex. In many cases, there are multiple sources. Ruth Ann Norton noted that the predominant problem is lead in housing and we need to be clear about the importance of protecting children from leaded housing in Maryland. Adam Skolnik stated he understands that housing is the main source for lead exposure for young children but that action needs to be taken on all lead sources identified in the investigation of the case.

A motion was made by Anna Davis, seconded by Susan Kleinhammer, to support HB 304 with amendments: (1) all housing is covered, including owner-occupied properties; (2) CDC language of a reference level is used (not 5µg/dL); (3) definition of "reference level" is added to 6-801. The motion passed: 6 yes votes, 3 abstentions.

2. HB 479/SB 1066 – Juvenile Law – Lead Testing and Behavioral Health Assessment. Hearing 2/8 in the Judiciary Committee. Requires juvenile court to order BLL testing of juveniles with parental consent and to create a behavioral health assessment of the child. Regarding the genesis of the bill, Ruth Ann Norton stated she had reached out to Nick Mosby. GHHI wants resources put on prevention. Previous states attorneys were frustrated at the number of young people with a history of increased BLL. GHHI has no position on the bill. Cliff Mitchell said he is unsure what BLL is associated with earlier lead paint exposure; if the child had a retained bullet fragment, they would also have an elevated BLL. This will require someone to identify the source and to take action. Ruth Ann Norton suggested that the purpose of the bill may be to establish a cost for reparations. Adam Skolnik stated that part of the rationale behind the bill is to determine if lead paint is associated with crime. Anna Davis said the only benefit might be to change services a child would get or change the way to approach the child, if history of elevated BLL is known. The disparity is in who is getting charged and how they are getting charged. Barb Moore said it would be difficult to determine the lead source. Pat McLaine stated it would be possible to identify a child's history or lead exposure as a child from CLR records. Anna Davis noted that this is a requirement and obligation of the child's counsel to investigate a child's lead history and take it into account and that the court can do this if asked. Christina Peusch noted that the Commission's charge is prevention. Anna Davis made a motion that the Commission NOT take a positon on HB479; the motion was seconded by Christina Peusch. The motion passed: 6 yes votes, 3 abstentions.

3. HB 604 Baltimore City Lead Remediation and Recovery Act– this is bill holding paint manufactures liable for lead damages based on their market share of sales in Baltimore City; it does not waive future claims. Bill is assigned to both the Judiciary and Environment and Transportation Committees. Adam Skolnik stated that we can't know who produced paint used on individual properties. The bill precludes parents and children from suing. Only the City, Housing Authority, and property owners could sue. This is a change from last year's bill where anyone could sue. It is unclear if Baltimore City is supporting this bill. Ruth Ann Norton stated that California had secured a $1.1 billion judgement against Sherwin Williams based on nuisance. She said it troubles her to take away individual right to sue, which is a civil liberty issue. GHHI has supported market share liability in the past. Sherwin Williams voted in 1904 not to enter production of lead-based paint because of harm to children and pregnant women. But in 1904, the company changed course and decided to enter the market. Anna Davis asked if this was a concern of the Commission. Pat McLaine noted that having resources is critical and of concern to the Commission. The Commission decided to revisit this bill at the March meeting.

4. SB 444 – Task Force on Social Determinants of Health in Baltimore City. Bill is assigned to Finance Committee and was introduced by Senator Nathan-Pulliam. The bill calls for the investigation of social factors and development and implementation of solutions for Baltimore City with a report due December 1 each year. Bill includes provision for recommendations on housing, including lead, mold and blight. Concern was raised that the Task Force should include both residents and representatives of housing interests. A motion was made by Anna Davis, seconded by Susan Kleinhammer, to support SB444 with amendment that the Task Force includes Baltimore City residents and representatives of housing interests. The motion passed: 6 yes votes.

5. SB 469 Public Health – School Buildings – Minimum Health Standards (Healthy Schools Program) – The bill would establish a new section on school building minimum health standards. It is assigned to Budget and Taxation with a hearing scheduled for February 21st. The bill establishes a healthy schools program to promote healthy environment in schools. Each district would adopt regulations to establish minimum standards to protect the health of occupants of school buildings. The scope includes indoor air quality, water, asbestos, lead, temperature, mold and pests. There has been a voluntary program and Baltimore City has taken the lead in addressing these issues in Maryland. Is there concern about lead in the schools? This bill would give specific authority to focus on schools and specific regulatory authority to take action to address problems. It was discussed that the bill should include private schools as well, but private schools are not covered by this bill. Adam Skolnik noted that there have been concerns raised in Baltimore County schools about temperature and need for air conditioning. A motion was made by Anna Davis, seconded by Susan Kleinhammer, to support SB469. The motion passed: 6 yes votes.

6. SB 524 Landlord and Tenant – Repossession for Failure to Pay Rent – Lead Risk Reduction Compliance – The bill is sponsored by Senator Kelly. The hearing is scheduled for February 15th in Judicial Proceedings. Landlords are required to have lead paint registration and compliance information; currently if that information was not available, judge **may** dismiss landlord's attempt to repossess the property. SB524 says the judge **shall** dismiss the landlord's attempt to repossess if lead paint registration and compliance information is not available. Ruth Ann Norton stated that MDE should support actions on property owners who lie on this form. Enforcement is not being done. The Bill would open up this process – GHHI supports the bill. Adam Skolnik noted that the information is required to be given now and judges already have the authority to dismiss a complaint based on information not being present. Susan Kleinhammer asked if there are any statistics about the number of cases. Ludeen Green said it is a best practice issue. If the law is clear cut, it would be easier to argue that an action against a tenant should be dismissed. Adam Skolnik stated that the tenant still owes rent and it is important to have the landlords paid. Ruth Ann Norton noted that landlords should not be permitted to collect cash rents if rental property is not in compliance with the law. Adam Skolnik stated this is an issue when the tenant doesn't show up to a hearing. Susan Kleinhammer noted that this would only impact affected properties. Motion was made by Christina Peusch, seconded by Anna Davis, to support SB524. The motion passed: 5 yes votes, 1 opposed.

2018 Calendar – Pat McLaine distributed a draft calendar for 2018. Adam Skolnik suggested that if each agency reported in writing, the Commissioners would have the opportunity to review the report and ask questions. This would be of value to Commission. Requirement would apply to agency updates and specific required reports. In the interest of time, the Commission decided to discuss this issue at the March meeting to give individuals who are impacted to chance to discuss this issue.

Future Meeting Dates
The next Lead Commission Meeting is scheduled for Thursday, March 1, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment - nothing to report

Maryland Department of Health – no representative present

Maryland Department of Housing and Community Development – DHCD is moving forward through the procurement process for Healthy Homes for Healthy Kids. All state fiscal year funds for lead will be spent by the end of this week. Last fiscal year was the first year that the Department used all the lead money. DHCD is informing local agencies that they will continue to accept applications but funding won't be available until 7/15/18.

Baltimore City Health Department – no representative present

Baltimore City Housing and Community Development – no representative present

Office of Child Care – Manjula Paul reported that the agency has proposed regulatory change to change the year built from 1950 to before 1978; this will be proposed legislation. Manjula Paul will let the Commission know the bill number when available. Regarding the Commission's letter and request that Office of Childcare capture information about the age of property: Office of Childcare has given this priority status and the data is expected to be available in the next 6-10 months. A new Director of Childcare has been appointed, Jennifer Nizer, who will begin work on February 15, 2018.

Maryland Insurance Administration – nothing to report

Public Comment – no public comment.

Adjournment
A motion was made by Adam Skolnik to adjourn the meeting, seconded by Anna Davis. The motion was approved unanimously and the meeting was adjourned at 11:44 AM.

HOUSE BILL 304

M3, J1 8lr1124
CF 8lr2506

By: **Delegates R. Lewis, Lierman, Anderson, Conaway, Hayes, and Rosenberg**
Introduced and read first time: January 22, 2018
Assigned to: Environment and Transportation

A BILL ENTITLED

AN ACT concerning

Environment – Reduction of Lead Risk in Housing – Elevated Blood Lead Levels

FOR the purpose of reducing the elevated blood lead level that initiates certain case management, notification, and lead risk reduction requirements; and generally relating to the prevention of lead poisoning and the reduction of lead risk in housing.

BY repealing and reenacting, with amendments,
Article – Environment
Section 6–304, 6–819(c), and 6–846(a)
Annotated Code of Maryland
(2013 Replacement Volume and 2017 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article – Environment

6–304.

(a) The Secretary shall assist local governments, if necessary, to provide case management of children with elevated blood lead levels greater than or equal to [10] **5** micrograms per deciliter (µg/dl).

(b) On receipt of the results of a blood test for lead poisoning indicating that a child under 6 years of age has an elevated blood lead level greater than or equal to [10] **5** µg/dl, the Department or a local health department shall notify:

(1) The child's parent or legal guardian; and

(2) In the case of a child who lives in a rental dwelling unit, the owner of

EXPLANATION: **CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.**
[Brackets] indicate matter deleted from existing law.

the rental dwelling unit where the child resides.

6–819.

(c) (1) After February 23, 1996, an owner of an affected property shall satisfy the modified risk reduction standard:

(i) Within 30 days after receipt of written notice that a person at risk who resides in the property has an elevated blood lead level documented by a test for EBL greater than or equal to [15 μg/dl before February 24, 2006 or greater than or equal to] 10 μg/dl [on or after February 24, 2006] **BEFORE OCTOBER 1, 2018, OR GREATER THAN OR EQUAL TO 5 μG/DL ON OR AFTER OCTOBER 1, 2018**; or

(ii) Within 30 days after receipt of written notice from the tenant, or from any other source, of:

1. A defect; and

2. The existence of a person at risk in the affected property.

(2) (i) An owner who receives multiple notices of an elevated blood level under this subsection or multiple notices of defect under subsection (d) of this section may satisfy all such notices by subsequent compliance with the risk reduction measures specified in subsection (a) of this section, as documented by satisfaction of subsection (f) or (g) of this section, if the owner complies with the risk reduction measures specified in subsection (a) of this section after the date of the test documenting the elevated blood level or after the date the notices of defect were issued.

(ii) Subparagraph (i) of this paragraph does not affect an owner's obligation to perform the risk reduction measures specified in subsection (a) of this section for a triggering event that occurs after the owner satisfies the provisions of subparagraph (i) of this paragraph.

6–846.

(a) On receiving the results of a blood lead test under § 6–303 of this title indicating that a person at risk has an EBL greater than or equal to [15 μg/dl before February 24, 2006, or greater than or equal to] 10 μg/dl [on or after February 24, 2006] **BEFORE OCTOBER 1, 2018, OR GREATER THAN OR EQUAL TO 5 μG/DL ON OR AFTER OCTOBER 1, 2018**, the Department or a local health department shall notify:

(1) The person at risk, or in the case of a minor, the parent or legal guardian of the person at risk, of the results of the test; and

(2) The owner of the affected property in which the person at risk resides or regularly spends at least 24 hours per week of the results of the test.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect October 1, 2018.

MARYLAND LEAD POISONING PREVENTION COMMISSION

December 22, 2017

Re: Urgent Request for CHIP Reauthorization

Dear Senator Cardin, Senator Van Hollen, Representative Harris, Representative Ruppersberger, Representative Sarbanes, Representative Brown, Representative Hoyer, Representative Delaney, Representative Cummings, and Representative Raskin:

In light of the recent announcement that Children's Health Insurance Program (CHIP) reauthorization is not likely to be included in the continuing resolution to fund the federal government, the Governor's Lead Poisoning Prevention Commission of Maryland feels compelled to write to you to urge you to take immediate action to secure temporary CHIP funding before the end of the year. It is imperative that the essential health services that CHIP provides, such as well child exams, lead screening for children and pregnant women, and asthma management, continue without interruption.

CHIP is a crucial source of coverage for children in lower-and middle-income families whose parents earn too much to qualify for Medicaid, but can ill afford to purchase private insurance on their own. CHIP, which has long enjoyed bipartisan support, has helped to reduce the nation's uninsured rate for children to a record low of 5% and has significantly improved health outcomes and access to care for children and pregnant women.

Funding for CHIP expired on September 30, 2017. As a result, 9 million children across the country are at risk of losing their health insurance. Twelve states are in danger of exhausting their federal funding before the end of the year. Other states, like Maryland, estimate that all funds will be expended by April 2018.

We encourage you to put an end to the uncertainty facing so many families and to protect Maryland's children by enacting a long-term funding extension of the CHIP program.

On behalf of the Lead Poisoning Prevention Commission,

Patricia McLaine, DrPH, MPH, RN
Commission Chair

MARYLAND

Pet Grant-Lloyd -MDE- <pet.grant-lloyd@maryland.gov>

Responding to your message

Congressman Steny Hoyer <Steny.Hoyer2@mail.house.gov> Fri, Jan 19, 2018 at 6:49 PM
To: pet.grant-lloyd@maryland.gov

CONGRESSMAN STENY HOYER
THE 5TH CONGRESSIONAL DISTRICT OF MARYLAND

January 19, 2018

Dear Pet,

Thank you for contacting me to share your views on the status of the Child Health Insurance Program (CHIP). I sincerely appreciate your taking the time to make me aware of your concerns about this important matter.

I am deeply disappointed that CHIP expired on September 30, 2017 due to the inaction of Republicans in Congress. CHIP has done a great deal to keep families within Maryland's Fifth District thriving by enabling working families to access affordable health care coverage for their children. Federal CHIP funding will soon be depleted in many states, including Maryland, which will force many states to freeze enrollment, disenroll current enrollees and ultimately shut down their CHIP programs entirely. This outcome would deny access to essential health care services for millions of children.

Since its inception, CHIP has enjoyed broad, bipartisan support, and the Congressional Budget Office (CBO) recently estimated that making the program permanent would save the federal government $6 billion. Rather than work with Democrats to ensure that CHIP coverage remains available to children across the country for generations to come, Republicans instead attached in their funding package a six year reauthorization of CHIP to a short-term Continuing Resolution in a partisan effort to pass a stop-gap government funding bill. I opposed this legislation - the fourth short-term funding package the Republicans have asked us to support - because I strongly believe that it is imperative that Republicans stop playing political games and instead work with Democrats to responsibly fund the government and address the critical issues facing our nation, including CHIP and other urgent health care priorities.

It is critical that Congress act now to provide certainty for these families, and to ensure that they will not lose continuity of coverage or access to care. I can assure you that I will continue to fight tirelessly and urge my colleagues in the House of Representatives to come together and agree on a comprehensive, bipartisan solution for the nine million children across this country covered under the Children's Health Insurance Program.

Thank you again for sharing your thoughts with me. I encourage you to visit my website at www.hoyer.house.gov to stay up to date on issues in Maryland's Fifth District as well as across the country. While there, you can sign up for the *Hoyer Herald*, access my voting record, and get information about important public issues. If I can be of further assistance, please do not hesitate to contact me.

With kindest regards, I am

Sincerely yours,

Steny H. Hoyer

About Steny Hoyer | Newsroom |Issues & Legislation | 5th District | Contact Us

NOTE: Please do not respond to this message, as it comes from an outgoing-only email address that cannot accept replies. If you would like to contact me via email, please do so through my website's contact page.

10 to 5 So Kids Can Thrive!

HB304 - REDUCTION OF LEAD RISK IN HOUSING - ELEVATED BLOOD LEAD LEVELS

What Will HB304 Do?

- Lowers the threshold from 10 ug/dl to 5 ug/dl for the elevated blood lead level at which risk reduction measures and re-inspection in affected rental properties would be triggered.
- Lowers the blood lead action level for environmental investigation and medical case management from 10 ug/dl to 5 ug/dl for rental and owner occupied properties.

Why Support HB304?

- Adopts the federal guidelines to direct public efforts toward prevention by setting the threshold for actions in Maryland at 5 ug/dl.
  (In 2012, the Centers for Disease Control and Prevention (CDC) determined that there was no safe level of lead in a child's body and lowered the blood lead reference level from 10 µg/dl to 5 µg/dl for children)
- There are **1,729 children** annually with blood lead levels of 5 -9 ug/dl in Maryland that are not receiving the prevention services that are needed to lower their lead poisoning levels. We can no longer wait to act!
- Lowering the action level for environmental intervention in Maryland will prevent higher level lead poisonings and the possible poisoning of siblings in the home.
- Children in owner occupied homes need greater protections than they receive today and this Bill will provide: inspections to identify the lead hazards in their home, prevention education and case management to link parents to prevention resources.
- Provides earlier notification and protection to rental property owners so they can respond and reduce their liability.

How Does Maryland Compare with Federal Standards and Other States?

- Other states, including New Jersey, Kansas, Kentucky, Minnesota, Michigan, Nebraska, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Vermont and Maine, have determined that all children are created equal and should receive immediate action at lower blood lead levels. These states have set 5 ug/dl as the action level for environmental investigation and case management services.
- Not adopting the federal standard puts our state efforts out of step with best practices and does a disservice to what we already know to work to reduce lead poisoning - primary prevention.

- HB304 would bring Maryland in line with the federal CDC guidelines and current research.

- We commend the State for the decision to implement Universal Blood Lead Testing but children that are identified with lead levels between 5-9 ug/dl currently do not receive necessary hazard reduction treatments, medical case management and prevention education even though we know there is no safe level in a child's body.

Our Moral Obligation

- The effects of lead poisoning are clear and well documented. Lead poisoning contributes to learning disabilities, loss of IQ, speech development problems, attention deficit disorder, poor school performance and violent, aggressive behavior. If we can implement MANDATORY environmental intervention, education and outreach to families of children with EBLs of 5 ug/dl or higher, then we can prevent lead levels from getting higher and lower the societal costs spent after a child has been poisoned.

- The State cannot put financial concerns before the health of children in this State. MDE's Lead Special Fund has increased substantially in the past several years and there is additional funding to support the state or local expenditures needed to implement the law's changes.

- The science is clear that there is no safe level of lead and the impact is permanent and long term. Maryland must pursue more proactive and preventive policies rather than reactive policies after a child has been lead poisoned to a level of 10 ug/dl.

WE ASK YOU TO SUPPORT HB304!

Green & Healthy Homes Initiative®

2714 Hudson Street
Baltimore, MD 21224
410-534-6447
www.ghhi.org

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report 2016

July 2017

Table Two

Blood Lead Testing of Children Aged 0-72 Months by Jurisdiction in 2016[1]

County	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	5,164	1,200	23.2	5	0.4	20	1.7	25	2.1	3	0.3	3	0.3	6	0.5
Anne Arundel	51,288	10,063	19.6	12	0.1	50	0.5	62	0.6	2	0.0	13	0.1	15	0.1
Baltimore	71,443	17,079	23.9	29	0.2	161	0.9	190	1.1	6	0.0	26	0.2	32	0.2
Baltimore City	60,224	16,892	28.0	282	1.7	522	3.1	804	4.8	54	0.3	113	0.7	167	1.0
Calvert	7,618	787	10.3	1	0.1	2	0.3	3	0.4	0	0.0	0	0.0	0	0.0
Caroline	3,443	740	21.5	4	0.5	9	1.2	13	1.8	1	0.1	1	0.1	2	0.3
Carroll	13,885	1,820	13.1	2	0.1	14	0.8	16	0.9	1	0.1	2	0.1	3	0.2
Cecil	9,621	1,544	16.0	3	0.2	19	1.2	22	1.4	0	0.0	3	0.2	3	0.2
Charles	14,093	2,391	17.0	1	0.0	20	0.8	21	0.9	0	0.0	2	0.1	2	0.1
Dorchester	2,977	635	21.3	2	0.3	12	1.9	14	2.2	0	0.0	2	0.3	2	0.3
Frederick	22,306	4,574	20.5	4	0.1	25	0.5	29	0.6	0	0.0	5	0.1	5	0.1
Garrett	2,372	393	16.6	0	0.0	5	1.3	5	1.3	0	0.0	1	0.3	1	0.3
Harford	22,438	3,787	16.9	3	0.1	25	0.7	28	0.7	0	0.0	2	0.1	2	0.1
Howard	26,276	3,844	14.6	1	0.0	25	0.7	26	0.7	3	0.1	8	0.2	11	0.3
Kent	1,499	220	14.7	0	0.0	1	0.5	1	0.5	0	0.0	0	0.0	0	0.0
Montgomery	94,806	22,392	23.6	15	0.1	165	0.7	180	0.8	6	0.0	25	0.1	31	0.1
Prince George's	86,351	21,424	24.8	21	0.1	147	0.7	168	0.8	6	0.0	41	0.2	47	0.2
Queen Anne's	4,119	668	16.2	1	0.1	4	0.6	5	0.7	0	0.0	2	0.3	2	0.3
Saint Mary's	11,291	1,352	12.0	1	0.1	6	0.4	7	0.5	0	0.0	1	0.1	1	0.1
Somerset	1,892	449	23.7	3	0.7	3	0.7	6	1.3	0	0.0	3	0.7	3	0.7
Talbot	2,821	634	22.5	1	0.2	1	0.2	2	0.3	0	0.0	2	0.3	2	0.3
Washington	13,495	2,822	20.9	10	0.4	32	1.1	42	1.5	1	0.0	7	0.2	8	0.3
Wicomico	9,124	2,075	22.7	8	0.4	27	1.3	35	1.7	2	0.1	6	0.3	8	0.4
Worcester	3,448	834	24.2	4	0.5	21	2.5	25	3.0	0	0.0	2	0.2	2	0.2
Statewide	**541,994**	**118,619**	**21.9**	**413**	**0.3**	**1,316**	**1.1**	**1,729**	**1.5**	**85**	**0.1**	**270**	**0.2**	**355**	**0.3**

1. The table is based on the selection of the highest blood lead test for each child in calendar year 2016 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 the blood lead level of 5-9 µg/dL in 2016 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 2016. 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 levels ≥10 µg/dL. These children may have carried from 2015 or had a blood lead test with blood lead levels ≥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 first decimal point, the sum of breakdown percentages may not necessarily equal total percentage.

Low-Level Environmental Lead Exposure and Children's Intellectual Function: An International Pooled Analysis

Bruce P. Lanphear,[1,2] Richard Hornung,[1,2,3] Jane Khoury,[1,2] Kimberly Yolton,[1] Peter Baghurst,[4] David C. Bellinger,[5] Richard L. Canfield,[6] Kim N. Dietrich,[1,2] Robert Bornschein,[2] Tom Greene,[7] Stephen J. Rothenberg,[8,9] Herbert L. Needleman,[10] Lourdes Schnaas,[11] Gail Wasserman,[12] Joseph Graziano,[13] and Russell Roberts[14]

[1]Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA; [2]Department of Environmental Health, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA; [3]Institute for Health Policy and Health Services Research, Department of Environmental Health, University of Cincinnati, Cincinnati, Ohio, USA; [4]Women and Children's Hospital, North Adelaide, South Australia; [5]Department of Neurology, Children's Hospital Boston and Harvard Medical School, Boston, Massachusetts, USA; [6]Division of Nutritional Sciences, Cornell University, Ithaca, New York, USA; [7]Department of Biostatistics and Epidemiology, Cleveland Clinic Foundation, Cleveland, Ohio, USA; [8]Center for Research in Population Health, National Institute of Public Health, Cuernavaca, Morelos, Mexico; [9]Drew University, Los Angeles, California, USA; [10]University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, USA; [11]National Institute of Perinatology, Mexico City, Mexico; [12]Department of Child Psychiatry, Columbia University, New York, New York, USA; [13]Department of Environmental Health Sciences, Columbia University, New York, New York, USA; [14]School of Applied Psychology, Griffith University, Queensland, Australia

Lead is a confirmed neurotoxin, but questions remain about lead-associated intellectual deficits at blood lead levels < 10 μg/dL and whether lower exposures are, for a given change in exposure, associated with greater deficits. The objective of this study was to examine the association of intelligence test scores and blood lead concentration, especially for children who had maximal measured blood lead levels < 10 μg/dL. We examined data collected from 1,333 children who participated in seven international population-based longitudinal cohort studies, followed from birth or infancy until 5–10 years of age. The full-scale IQ score was the primary outcome measure. The geometric mean blood lead concentration of the children peaked at 17.8 μg/dL and declined to 9.4 μg/dL by 5–7 years of age; 244 (18%) children had a maximal blood lead concentration < 10 μg/dL, and 103 (8%) had a maximal blood lead concentration < 7.5 μg/dL. After adjustment for covariates, we found an inverse relationship between blood lead concentration and IQ score. Using a log-linear model, we found a 6.9 IQ point decrement [95% confidence interval (CI), 4.2–9.4] associated with an increase in concurrent blood lead levels from 2.4 to 30 μg/dL. The estimated IQ point decrements associated with an increase in blood lead from 2.4 to 10 μg/dL, 10 to 20 μg/dL, and 20 to 30 μg/dL were 3.9 (95% CI, 2.4–5.3), 1.9 (95% CI, 1.2–2.6), and 1.1 (95% CI, 0.7–1.5), respectively. For a given increase in blood lead, the lead-associated intellectual decrement for children with a maximal blood lead level < 7.5 μg/dL was significantly greater than that observed for those with a maximal blood lead level ≥ 7.5 μg/dL (p = 0.015). We conclude that environmental lead exposure in children who have maximal blood lead levels < 7.5 μg/dL is associated with intellectual deficits. *Key words:* blood lead concentration, children, environment, epidemiology, intelligence, lead, lead toxicity. *Environ Health Perspect* 113:894–899 (2005). doi:10.1289/ehp.7688 available via *http://dx.doi.org/* [Online 18 March 2005]

The preponderance of experimental and human data indicates that there are persistent and deleterious effects of blood lead levels > 10 μg/dL on brain function, including lowered intelligence, behavioral problems, and diminished school performance (Baghurst et al. 1992; Bellinger et al. 1992; Cory-Slechta 1997; Dietrich et al. 1993; Ernhart et al. 1989; National Research Council 1993; Needleman and Gatsonis 1990; Pocock et al. 1994; Rice 1993; Wasserman et al. 1997; Yule et al. 1981). Lead toxicity, defined as whole blood lead ≥ 10 μg/dL, was based on numerous cross-sectional and prospective studies [Bellinger et al. 1987; Centers for Disease Control and Prevention (CDC) 1991; World Health Organization (WHO) 1995]. These studies generally, but not always, found adverse consequences of childhood lead exposure (CDC 1991; WHO 1995). Still, most of the children in those studies had blood lead levels > 10 μg/dL. The WHO and the CDC recognized that there was no discernable threshold for the adverse effects of lead exposure, but too few studies had examined children with blood lead levels < 10 μg/dL to support any firm conclusions (CDC 1991; WHO 1995).

There is emerging evidence that lead-associated intellectual deficits occur at blood lead levels < 10 μg/dL. In the Rochester Longitudinal Study, there was an estimated reduction of 7.4 IQ points associated with an increase in lifetime mean blood lead from 1 to 10 μg/dL (Canfield et al. 2003). In a reanalysis of a Boston, Massachusetts, cohort, a similar finding was observed among children whose maximal blood lead level was < 10 μg/dL (Bellinger and Needleman 2003). Questions about an effect of lead at blood lead levels < 10 μg/dL persist, however, because of the relatively small numbers of children with maximal blood lead levels < 10 μg/dL in the Rochester Longitudinal Study (Rogan and Ware 2003). Other studies were limited because they involved children whose blood lead levels may have exceeded 10 μg/dL at some point in their lifetime or because important covariates, such as maternal IQ scores, were not always available (Fulton et al. 1987; Lanphear et al. 2000; Schwartz 1994; Schwartz and Otto 1991; Walkowiak et al. 1998). Because of the policy implications of this research, it is critical to estimate with greater precision the exposure–response relationship at blood lead levels < 10 μg/dL.

The primary objective of this pooled analysis was to estimate the quantitative relationship between children's performance on IQ tests and selected measures of blood lead concentration among children followed prospectively, from infancy through 5–10 years of age in seven prospective cohort studies. We also sought to test whether the lead-associated IQ deficit was greater for a given change in exposure among children who had maximal blood lead levels < 10 μg/dL compared with children who had higher blood lead concentrations.

Materials and Methods

We contacted investigators for all eight prospective lead cohorts that were initiated before 1995, and we were able to retrieve data sets and collaboration from seven. The participating sites were Boston (Bellinger et al. 1992); Cincinnati (Dietrich et al. 1993) and Cleveland, Ohio (Ernhart et al. 1989); Mexico City, Mexico (Schnaas et al. 2000);

Address correspondence to B.P. Lanphear, Cincinnati Children's Hospital Medical Center, 3333 Burnet Ave., Mail Location 7035, Cincinnati, OH 45229-3039 USA. Telephone: (513) 636-3778. Fax: (513) 636-4402. E-mail: bruce.lanphear@cchmc.org

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The authors declare they have no competing financial interests.

Received 22 October 2004; accepted 17 March 2005.

Port Pirie, Australia (Baghurst et al. 1992); Rochester, New York (Canfield et al. 2003); and Yugoslavia (Wasserman et al. 1997). The Sydney, Australia, study was not included because we were unable to contact the investigators (Cooney et al. 1989). The data for the Rochester Longitudinal Study and for Mexico City, collected when the children were about 6 years of age, have not been published elsewhere. The eligibility criteria and methods for each of the cohorts are described elsewhere (Baghurst et al. 1992; Bellinger et al. 1992; Canfield et al. 2003; Dietrich et al. 1993; Ernhart et al. 1989; Schnaas et al. 2000; Wasserman et al. 1997). All studies were approved by their respective institutional review boards.

Outcome measures. The primary outcome measure was the full-scale IQ, which is a composite score of verbal and performance tests. The children were administered a version of the Wechsler Intelligence Scales for Children [Wechsler Intelligence Scale for Children–Revised (WISC-R; Wechsler 1974), Wechsler Intelligence Scale for Children–III (WISC-III; Wechsler 1991), Wechsler Preschool and Primary Scales of Intelligence (WPPSI; 1967), and Wechsler Intelligence Scale for Children–Spanish Version (WISC-S; Wechsler 1981)] under uniform conditions within each study. The IQ test was administered when the children were between 4 years 10 months and 7 years of age for all but one cohort. In the Boston cohort, we used blood lead tests taken at 5 years of age and the nearest available full-scale IQ score, which was done at 10 years of age.

Venous or fingerstick capillary blood samples were obtained using standard protocols. Cord blood lead was collected in a subsample of the subjects. During each child's examination, demographic and health information were obtained from the parent (usually the biologic mother). IQ tests were administered to the mother. We also obtained data on other factors that might confound the relation of lead exposure and IQ, including child's sex, birth order, birth weight, maternal education, maternal age, marital status, prenatal alcohol exposure, prenatal tobacco exposure, and the Home Observation for Measurement of the Environment (HOME) Inventory score. The HOME Inventory is an index that reflects the quality and quantity of emotional and cognitive stimulation in the home environment (Caldwell and Bradley 1984).

Measures of exposure. We examined four measures of blood lead: concurrent blood lead (defined as the blood lead measured closest to the IQ test), maximum blood lead level (defined as the peak blood lead measured at any time before IQ test), average lifetime blood lead (defined as the mean blood lead from 6 months to concurrent blood lead tests), and early childhood blood lead (defined as the mean blood lead from 6 to 24 months). The blood sampling intervals varied across studies. To enhance comparability across studies, we used the following blood sampling intervals (based on children's age): 6, 12 (or 15), 36, 48, and 60 months. We used mean blood lead rather than area under the curve (AUC) to maintain the same units of analysis for all four lead indices. The AUC and mean provided essentially the same information about children's lead exposure ($r = 0.97$).

Statistical methods. To estimate the quantitative relationship between children's performance on IQ tests and selected measures of blood lead concentration, we examined the potential confounding effects of other factors associated with IQ scores using multiple regression analysis. Ten factors were available from individual sites: HOME Inventory, child's sex, birth weight, birth order, maternal education, maternal IQ, maternal age, marital status, prenatal smoking status, and prenatal alcohol use.

The development of the regression model involved a multistep process beginning with a simple unadjusted model relating each blood lead measure to IQ while controlling for site. The first step was to test whether the linear model of the relationship between blood lead and IQ, applied in most of the individual cohort analyses, provided a good fit over the wider range of blood lead levels represented in the pooled data. First, a linear model adjusted for the seven sites was estimated, and then quadratic and cubic terms for blood lead were added to test for linearity. A restricted cubic spline function was fit to the data to produce a curve that followed the data in the absence of any assumptions about the functional form of the relationship.

After an initial model was chosen, we examined each of the 10 available confounders individually and in combination with the other covariates to assess potential confounding of the IQ–blood lead relationship. Careful attention was paid to the stability of the parameter estimates as each additional term was added. This process was halted when either no more significant terms ($p < 0.10$) entered the model or the inclusion of additional terms caused no substantial change (i.e., > 10%) in the blood lead coefficient.

In all models, we tested the interaction of blood lead and site to determine whether a summary measure of the IQ–blood lead relationship could be used for all cohorts. After an initial model was selected, the tests of linearity and the restricted cubic spline models were recomputed to ensure that our initial model was still appropriate after adjustment for covariates (Harrell 2001). We also produced separate linear models for each of the seven cohorts adjusted for the covariates selected in the combined model.

After the multiple regression models were developed, regression diagnostics were employed to ascertain whether the lead coefficient was affected by collinearity or influential observations (Belsley et al. 1980). After regression diagnostics were examined and homogeneity of the blood lead coefficients across sites was evaluated, the fit of all four measures of blood lead was compared using the magnitude of the model R^2. The blood lead measure with the largest R^2 (adjusted for the same covariates) was selected *a priori* as the preferred blood lead index relating blood lead to IQ.

Several approaches were investigated to evaluate the stability of the final model. Although the seven cohorts were not randomly sampled from a larger population of studies, an assumption could be made that they were representative of a larger population of children. Accordingly, we evaluated the results of applying a random-effects model (with sites random) rather than a fixed-effects model (Littell et al. 1996). We also examined the effect of any one site on the overall model by calculating the blood lead coefficient in seven identical models, each omitting one of the seven cohorts (Efron and Tibshirani 1993).

After the final model was selected using the full-scale IQ as the outcome variable, we fit similar models for verbal and performance IQ scores. We also examined interactions of covariates with blood lead concentration (effect modification) and tested the effect of including race as a confounder in the U.S. cohort studies. Finally, we examined the relationship of prenatal lead exposure (cord blood) and IQ score in the subsample for which cord blood lead tests were available.

Results

Of the 1,581 eligible children from the seven cohorts, data on all 10 covariates were available for 1,308 (83%) children; 1,333 (84%) children had data on the four major covariates that were selected for the final model (Table 1). Blood lead levels were highest in Yugoslavia and lowest in Rochester and Boston for all lead exposure indices (Table 2). The median peak or maximal blood lead concentration was 18 μg/dL; the mean age when children's blood lead levels peaked was 2.5 years. By 5–7 years of age, the median blood level had declined to 9.7 μg/dL (concurrent blood lead concentration). The lifetime average blood lead concentration was 12.4 μg/dL; 244 (18%) children had a maximal blood lead concentration < 10 μg/dL, and 103 (8%) had a maximal blood lead concentration < 7.5 μg/dL.

The mean IQ of all children was approximately 93. Child IQ was highest in the Boston cohort and lowest in the Yugoslavia cohort (Table 2). In univariate regression analyses, children's IQ was significantly related to site, maternal IQ, the HOME score, maternal education, marital status, birth weight, maternal age, birth order, race (for U.S. cohorts only), and prenatal tobacco exposure. In contrast, child's sex and prenatal alcohol consumption were not significantly associated with a deficit in IQ score (Table 3).

Table 1. Characteristics of the children and of their mothers in the pooled analysis (n = 1,333).

Characteristic	Value
Child characteristics	
Female[a]	669 (50.2)
Birth weight[b] (g)	3,286 ± 503
Gestation at delivery[b] (weeks)	39.6 ± 1.9
Birth order[c]	2.0 (1–5)
Blood lead concentration[c]	
Concurrent	9.7 (2.5–33.2)
Peak	18.0 (6.2–47.0)
Early childhood	12.7 (4.0–34.5)
Lifetime average	12.4 (4.1–34.8)
Peak blood lead concentration < 10 µg/dL[a]	244 (18.3)
Peak blood lead concentration < 7.5 µg/dL[a]	103 (7.7)
IQ[b]	93.2 ± 19.2
Age at IQ testing[b] (years)	6.9 ± 1.2
Maternal characteristics	
Age at delivery[b] (years)	25.4 ± 5.4
Maternal IQ[b]	88.2 ± 18.5
Education at delivery[b] (grade)	11.1 ± 2.8
HOME score[b]	37.0 ± 8.4
Married[a]	896 (67.3)
Smoked during pregnancy[a]	453 (34.1)
Alcohol use during pregnancy[a]	278 (21.2)

HOME score was standardized to preschool test. Early childhood blood lead concentration was defined as the mean of 6- to 24-month blood lead tests. Lifetime average blood lead concentration was defined as the mean of blood lead tests taken from 6 months through the concurrent blood lead test.
[a]No. (%). [b]Mean ± SD. [c]Median (5th–95th percentiles).

We examined the relationship of the four blood lead indices with IQ (Table 4). Although all four blood lead measures were highly correlated (r range = 0.74–0.96), the concurrent blood lead variable exhibited the strongest relationship with IQ, as measured by R^2. Although the means differed for the different blood lead indices, the results of the regression analyses were very similar. In all subsequent analyses and figures, the concurrent blood lead measure was used as the primary lead exposure index.

The shape of the exposure–response relationship was determined to be nonlinear insofar as the quadratic and cubic terms for concurrent blood lead were statistically significant (p < 0.001 and p = and 0.003, respectively). Because the restrictive cubic spline indicated that a log-linear model provided a good fit to the data, we used the log of concurrent blood lead in all subsequent analyses of the pooled data (Figure 1).

The multivariable analysis resulted in a six-term model: log of concurrent blood lead, site, maternal IQ, HOME Inventory, birth weight, and maternal education, which we consider our preferred model (Table 4). Linear models of concurrent blood lead and IQ are shown for each of the seven cohorts, adjusted for the same covariates (Figure 2). The additional six terms we considered (child's sex, birth order, maternal age, marital status, prenatal smoking status, and prenatal alcohol use) contributed very little to the overall fit of the model, and their inclusion in the model resulted in virtually no change to the coefficient for blood lead (i.e., < 5%). None of the six terms was statistically significant (data not shown).

The shape of the log-linear model and the spline function indicated that the steepest declines in IQ were at blood lead levels < 10 µg/dL (Figures 3 and 4). The log-linear model estimated a decrement of 6.9 IQ points [95% confidence interval (CI), 4.2–9.4] for an increase in concurrent blood lead levels from 2.4 to 30 µg/dL, representing the 5th to the 95th percentile for blood lead values in the data set (Table 4). But the lead-associated decrement was greatest in the lower ranges of blood lead. The estimated IQ decrements associated with an increase in blood lead from 2.4 to 10 µg/dL, 10 to 20 µg/dL, and 20 to 30 µg/dL were 3.9 (95% CI, 2.4–5.3), 1.9 (95% CI, 1.2–2.6), and 1.1 (95% CI, 0.7–1.5), respectively (Table 4).

To investigate further whether the lead-associated decrement was greater at lower blood lead concentrations, we divided the data at two cut-points *a priori* (i.e., maximal blood lead above and below 10 µg/dL, and maximal blood lead above and below 7.5 µg/dL) (Figure 4). We then fit separate linear models to the data in each of these ranges and compared the blood lead coefficients for the concurrent blood lead index. The coefficient for the 103 children with maximal blood lead levels < 7.5 µg/dL was significantly greater than the coefficient for the 1,230 children with a maximal blood lead

Table 2. Characteristics of 1,333 children and their mothers in seven cohort studies of environmental lead exposure and IQ.

Characteristic	Boston (n = 116)	Cincinnati (n = 221)	Cleveland (n = 160)	Mexico (n = 99)	Port Pirie (n = 324)	Rochester (n = 182)	Yugoslavia (n = 231)
Percent female[a]	60 (51.7)	108 (48.9)	73 (45.6)	50 (50.5)	174 (53.7)	89 (48.9)	115 (49.8)
Birth weight[b] (g)	3,412 ± 510	3,144 ± 457	3,199 ± 498	3,254 ± 432	3,393 ± 502	3,226 ± 506	3,328 ± 526
Gestation at delivery[b] (weeks)	40.0 ± 1.8	39.6 ± 1.7	39.6 ± 1.2	40.2 ± 1.1	39.9 ± 1.7	39.1 ± 1.8	39.3 ± 2.9
Birth order[b]	1.6 ± 1.0	2.6 ± 1.4	2.2 ± 1.1	1.8 ± 0.9	2.0 ± 1.1	2.4 ± 1.4	2.6 ± 1.7
IQ test	WISC-R	WISC-R	WPPSI	WISC-S	WISC-R	WPPSI	WISC-III
IQ score[b]	116.0 ± 14.2	87.0 ± 11.4	86.7 ± 16.2	107.8 ± 11.0	106.0 ± 13.7	84.9 ± 14.4	74.2 ± 13.3
Age at IQ testing (years)	10	7	4.8	7	7	6	7
Blood lead concentrations[c]							
Concurrent blood lead	5.4 (0.8–12.7)	7.5 (3.5–20.0)	14.2 (7.0–28.5)	7.0 (3.0–16.5)	13.0 (6.0–24.0)	4.0 (1.5–12.0)	15.9 (4.7–47.8)
Peak blood lead	12.0 (5.4–27.0)	17.9 (9.0–38.0)	18.0 (9.0–34.0)	15.0 (6.0–40.0)	27.0 (15.0–46.0)	9.0 (3.5–23.3)	23.8 (7.6–61.5)
Early childhood	8.1 (3.3–18.0)	12.0 (6.6–26.6)	13.4 (7.9–24.8)	11.4 (4.3–26.8)	20.5 (11.0–33.3)	5.8 (2.4–13.1)	14.1 (4.3–44.0)
Lifetime mean	7.6 (3.6–15.2)	11.7 (5.8–24.9)	14.5 (8.1–25.3)	10.6 (4.5–21.3)	18.6 (10.8–30.2)	5.5 (2.4–12.8)	15.8 (5.6–49.3)
Peak blood lead < 10 µg/dL[a]	41 (35.3)	23 (10.4)	11 (6.9)	20 (20.2)	0 (0.0)	103 (56.6)	46 (19.9)
Peak blood lead < 7.5 µg/dL[a]	13 (11.2)	1 (0.4)	1 (0.6)	8 (8.1)	0 (0.0)	69 (37.9)	11 (4.8)
Maternal characteristics							
Age at delivery (years)[b]	30.5 ± 4.2	22.7 ± 4.3	22.2 ± 3.8	27.1 ± 5.9	26.0 ± 4.2	24.8 ± 6.6	26.6 ± 5.1
Race (nonwhite)[a]	5 (4.3)	197 (89.1)	69 (43.1)	NA	NA	130 (71.4)	NA
Maternal IQ[b]	124.2 ± 16.2	75.2 ± 9.4	73.4 ± 13.2	93.4 ± 11.9	94.4 ± 11.0	81.1 ± 12.6	87.3 ± 14.8
Education at delivery (grade)[b]	15.2 ± 2.0	11.2 ± 1.4	10.6 ± 1.6	11.4 ± 3.5	10.6 ± 1.0	12.2 ± 2.0	8.8 ± 3.9
HOME score[b]	50.5 ± 3.5	32.7 ± 6.2	38.1 ± 6.7	36.8 ± 6.7	42.3 ± 4.6	31.9 ± 6.3	30.4 ± 6.8
Married[a]	107 (92.2)	30 (13.6)	82 (51.2)	88 (88.9)	298 (92.0)	60 (33.2)	231 (100)
Tobacco use during pregnancy[a]	29 (25.0)	111 (50.2)	128 (80.0)	6 (6.1)	79 (24.6)	41 (22.6)	59 (25.5)
Alcohol use during pregnancy[a]	61 (52.6)	31 (14.0)	75 (46.9)	6 (6.1)	82 (25.3)	9 (5.5)	14 (6.1)

NA, Not applicable. HOME score was standardized to preschool scale. Concurrent blood lead tests taken at 5 years of age were used as the concurrent blood lead test for the Boston cohort, and the IQ test was done at 10 years. Test scores of children in the Yugoslavia cohort are low because of adjustments in adapting tests where no standardization existed; rather than deriving appropriate analogues, some culturally driven items were removed, resulting in lower scores.
[a]No. (%). [b]Mean ± SD. [c]Geometric mean (5th–95th percentiles).

≥ 7.5 µg/dL [linear β = –2.94 (95% CI, –5.16 to –0.71) vs. –0.16 (95% CI, –2.4 to –0.08); p = 0.015]. The coefficient for the 244 children who had a maximal blood lead < 10 µg/dL was not significantly greater than the coefficient for the 1,089 children who had a maximal blood lead ≥ 10 µg/dL [linear β = –0.80 (95% CI, –1.74 to –0.14) vs. β = –0.13 (95% CI, –2.3 to –0.03); p = 0.103].

To assess the model stability, we employed a random-effects model with sites assumed to be randomly selected from a larger set of populations. Results were similar to the preferred fixed-effects model, with the random-effects model producing a blood lead coefficient that was 3.7% lower (–2.6 vs. –2.7). As an additional measure of model stability, we fit seven identical log-linear models with each model omitting data from one of the sites. The range of coefficients leaving one site out at a time was –2.36 (Rochester) to –2.94 (Yugoslavia), or a percent change ranging from –2.6 to +8.9%. These analyses provide evidence of the stability of our final preferred fixed-effects model and indicate that the results of the pooled analysis did not depend on the data from any single study.

We also examined the relation of blood lead concentration to verbal and performance IQ scores, adjusting for the same covariates used in the full-scale IQ model. The coefficient for the log of blood lead related to performance IQ was similar to the coefficient for log of blood lead in the full-scale IQ model (β = –2.73 vs. –2.70), whereas the coefficient for log of blood lead related to verbal IQ was somewhat lower than the coefficient for the log of blood lead in the full-scale IQ model (β = –2.07 vs. –2.70). The difference between the coefficient for verbal and performance IQ was not statistically significant (p = 0.196).

We did not identify any significant interactions between the covariates and the log of concurrent blood lead. In the U.S. sites, race was not significantly associated with IQ after inclusion of the four covariates in the preferred model, nor did it alter the estimated relationship of blood lead concentration and IQ. In unadjusted analyses involving the 696 children who had cord blood lead levels, the log of cord blood lead concentration was significantly associated with child's IQ (β = –1.69, SE = 0.60; p = 0.005). After adjusting for the log of concurrent blood concentration, the log of cord blood lead was no longer associated with children's IQ scores (p = 0.21). In contrast, the log of concurrent blood lead was significantly associated with children's IQ scores even with log cord blood lead concentration in the model (β = –1.73, SE = 0.74; p = 0.019). Finally, we identified and removed 65 potentially influential observations from the data and refit the model. The change in the coefficient for log of blood lead was 1.4%, from –2.70 to –2.74.

Discussion

Before 1970, undue lead exposure was defined by a blood lead level of 60 µg/dL or higher—a level often associated with overt signs or symptoms of lead toxicity, such as abdominal colic, anemia, encephalopathy, and death. Since then, the blood lead concentration for defining undue lead exposure has been reduced: from 60 to 40 µg/dL in 1971, to 30 µg/dL in 1978, and to 25 µg/dL in 1985 (CDC 1991). In 1991, the CDC, and subsequently the WHO (1995), further reduced the blood lead value defining undue lead exposure to 10 µg/dL (CDC 1991). These ongoing reductions in the

Table 3. Concurrent blood lead concentration and mean IQ scores by characteristics of children and their mothers (n = 1,333).

Covariate	No.	Median concurrent blood lead (µg/dL) (5th–95th percentiles)	IQ ± SD
Child			
Female	669	9.0 (2.4–31.4)	93.8 ± 18.3
Male	664	9.9 (2.6–35.7)	92.5 ± 20.0
Birth weight (g)			
< 3,000	359	10.0 (2.2–28.7)	88.6 ± 18.0
3,000 to < 3,500	519	9.9 (2.4–34.2)	93.6 ± 19.3
≥ 3,500	455	9.1 (2.8–34.7)	96.3 ± 19.3
Gestation at delivery (weeks)			
< 38	144	8.9 (3.1–37.9)	83.5 ± 18.6
38 to < 42	1,071	9.8 (2.5–33.2)	94.1 ± 18.6
≥ 42	115	10.0 (3.2–24.8)	96.3 ± 22.1
Birth order			
1	479	9.0 (2.1–32.6)	96.7 ± 18.9
2	407	10.0 (2.6–31.4)	93.6 ± 19.2
≥ 3	446	10.0 (3.0–36.9)	89.0 ± 18.7
Maternal			
Race (only U.S. cohorts)			
White	278	7.9 (1.3–22.0)	100.6 ± 20.1
Nonwhite	401	7.1 (2.8–21.5)	84.9 ± 12.8
Age at delivery (years)			
< 25	650	10.5 (3.0–32.0)	89.6 ± 17.2
≥ 25	683	9.0 (2.1–34.7)	96.5 ± 20.3
Maternal IQ			
< 85	618	10.0 (2.9–32.0)	83.3 ± 15.0
≥ 85	715	9.0 (2.1–34.3)	101.6 ± 18.3
Education at delivery (grade)			
< 12	710	12.0 (4.1–35.5)	90.4 ± 18.8
12	397	8.7 (2.4–34.3)	91.1 ± 17.7
≥ 12	226	5.5 (1.1–15.2)	105.5 ± 18.0
HOME score			
< 30	276	9.4 (3.0–43.0)	77.9 ± 14.9
30 to < 40	561	10.0 (2.8–32.2)	88.3 ± 15.4
≥ 40	496	9.5 (2.0–22.0)	107.0 ± 15.8
Married			
Yes	896	10.0 (2.7–37.5)	96.2 ± 20.5
No	436	8.1 (2.4–22.0)	87.0 ± 14.3
Prenatal smoking			
Yes	453	11.5 (3.2–33.2)	89.5 ± 17.2
No	876	8.7 (2.2–33.6)	94.9 ± 19.9
Prenatal alcohol ingestion			
Yes	278	10.1 (2.2–25.0)	99.3 ± 19.4
No	1,035	9.5 (2.7–34.3)	91.7 ± 18.8

Table 4. Mean unadjusted and adjusted[a] changes in full-scale IQ score associated with an increase in blood lead concentration (log scale), from the 5th to 95th percentile of the concurrent blood lead level at the time of IQ testing.

Blood lead variable	Unadjusted estimates [β (95% CI)]	Adjusted estimates [β (95% CI)]	Blood lead concentration (5th to 95th percentile, µg/dL)	IQ deficits [5th to 95th percentile (95% CI)]
Early childhood	–3.57 (–4.86 to –2.28)	–2.04 (–3.27 to –0.81)	4.1–34.8	4.4 (1.7–7.0)
Peak	–4.85 (–5.16 to –3.54)	–2.85 (–4.10 to –1.60)	4.0–34.5	6.1 (3.4–8.8)
Lifetime average	–5.36 (–6.69 to –4.03)	–3.04 (–4.33 to –1.75)	6.1–47.0	6.2 (3.6–8.8)
Concurrent	–4.66 (–5.72 to –3.60)	–2.70 (–3.74 to –1.66)	2.4–33.1	7.1 (4.4–9.8)

[a]Adjusted for site, HOME score, birth weight, maternal IQ, and maternal education. The addition of child's sex, tobacco exposure during pregnancy, alcohol use during pregnancy, maternal age at delivery, marital status, and birth order did not alter the estimate, and these were not included in the model. The estimates for the covariates in the concurrent blood lead model were HOME score (β = 4.23, SE = 0.54), birth weight/100 g (β = 1.53, SE = 0.35), maternal IQ (β = 4.77, SE = 0.57), and maternal education (β = 1.12, SE = 0.46).

acceptable levels of children's blood lead were motivated by evidence showing that blood lead concentrations as low as 10 µg/dL were associated with adverse effects, such as lower intelligence (CDC 1991; WHO 1995).

In this pooled analysis, we found evidence of lead-related intellectual deficits among children who had maximal blood lead levels < 7.5 µg/dL. Indeed, we found no evidence of a threshold. Other studies reported a similar finding, but questions about the relationship at lower levels remained because they involved smaller numbers of children with blood lead < 10 µg/dL or they did not adjust for important covariates (Canfield et al. 2003; Fulton et al. 1987; Lanphear et al. 2000; Schwartz 1994; Schwartz and Otto 1991; Walkowiak et al. 1998). In the pooled analysis, we estimated the blood lead–IQ relationship with data from the 5th to 95th percentile of the concurrent blood lead level at the time of IQ testing, which tends to underestimate the adverse effects of blood lead levels. For the entire pooled data set, the observed decline of 6.2 IQ points (95% CI, 3.8–8.6) for an increase in blood lead levels from < 1 to 10 µg/dL was comparable with the 7.4 IQ decrement for an increase in lifetime mean blood lead levels from < 1 to 10 µg/dL observed in the Rochester Longitudinal Study (Canfield et al. 2003).

Consistent with other studies (Bellinger and Needleman 2003; Canfield et al. 2003; Fulton et al. 1987; Lanphear et al. 2000; Schwartz 1994; Schwartz and Otto 1991; Walkowiak et al. 1998), the lead-associated IQ deficits observed in this pooled analysis were significantly greater at lower blood lead concentrations. In a meta-analysis, the observed decrement was greater in study cohorts in which children with blood lead levels < 15 µg/dL were more heavily represented (Schwartz 1994). In the Rochester Longitudinal Study, there was an estimated reduction of 7.4 IQ points for an increase in lifetime mean blood lead from 1 to 10 µg/dL (Canfield et al. 2003). In contrast, IQ scores declined 2.5 points for an increase in blood lead concentration from 10 to 30 µg/dL (Canfield et al. 2003). The larger sample size of this pooled analysis permitted us to show that the lead-associated intellectual decrement was significantly greater for children with a maximal blood lead of < 7.5 µg/dL than for those who had a maximal blood lead of ≥ 7.5 µg/dL. Although the difference in coefficients associated with the IQ decrement for children who had a maximal blood lead concentration < 10 µg/dL versus ≥ 10 µg/dL was not statistically significant, the results were consistent with the analysis using 7.5 µg/dL as a cut-point.

We found that concurrent blood lead levels or average lifetime estimates of lead exposure were generally stronger predictors of lead-associated intellectual deficits than was maximal measured (peak) or early childhood blood lead concentration. Although this finding conflicts with the widely held belief that 2-year (or peak) blood lead levels are the most salient measure of lead toxicity, there is increasing evidence that lifetime mean blood lead and concurrent blood lead levels are stronger predictors of IQ in older children (Baghurst et al. 1992; Canfield et al. 2003; Dietrich et al. 1993; Factor-Litvak et al. 1999). The stronger effects of concurrent and lifetime measures of lead exposure may be due to chronicity of exposure (Bellinger and Dietrich 1994). Alternatively, the weaker association with blood lead measured during early childhood may be due to exposure misclassification from the greater within-child variability of blood lead in younger children. Nevertheless, because blood lead concentrations taken in early childhood track closely with subsequent blood lead levels (Baghurst et al. 1992; Canfield et al. 2003; Dietrich et al. 1993), we cannot entirely resolve the question of whether children are more vulnerable to lead exposure during the first 2 years of life. Still, young children do ingest more lead during the first 2 years of life and may absorb it more efficiently than do older children and adults (Clark et al. 1985; Lanphear et al. 2002; Ziegler et al. 1978). Thus, efforts to prevent lead exposure must occur before pregnancy or a child's birth.

The specific mechanisms for lead-induced intellectual deficits have not been fully elucidated. There are several plausible mechanisms for the greater lead-associated intellectual deficits observed at blood lead levels < 10 µg/dL (Lidsky and Schneider 2003; Markovac and Goldstein 1988; Schneider et al. 2003), but it is not yet possible to link any particular mechanism with the deficits observed in this pooled analysis. Nevertheless, efforts can be taken to reduce environmental lead exposure without full elucidation of the underlying mechanism (Wynder 1994).

The observational design of this study limits our ability to draw causal inferences. Instead, we must rely on the consistency of findings from numerous epidemiologic and experimental studies in rodents and nonhuman primates, including evidence that environmental lead exposure is associated with intellectual deficits at blood lead levels < 10 µg/dL. There are potential limitations of the tools we used to measure important covariates. The HOME Inventory was not conducted at the same age for children in all of the sites, and the HOME Inventory and IQ tests have not been validated in all cultural or ethnic communities. Nonetheless, because these covariates were standardized and adjusted for study site, these problems do not pose any limitations to the interpretation of the pooled analysis results.

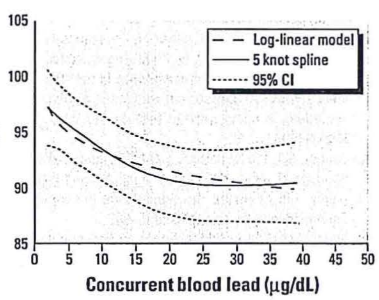

Figure 1. Restricted cubic splines and log-linear model for concurrent blood lead concentration. The dotted lines are the 95% CIs for the restricted cubic splines.

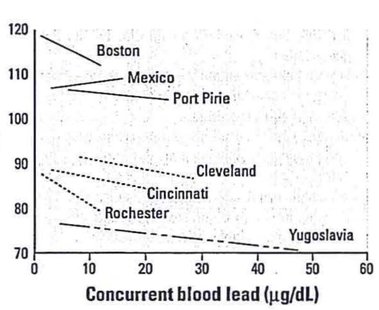

Figure 2. Linear models for each cohort study in the pooled analysis, adjusted for maternal IQ, HOME score, maternal education, and birth weight. The figure represents the 5th to 95th percentile of the concurrent blood lead level at the time of IQ testing.

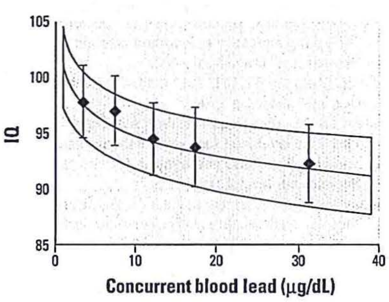

Figure 3. Log-linear model (95% CIs shaded) for concurrent blood lead concentration, adjusted for HOME score, maternal education, maternal IQ, and birth weight. The mean IQ (95% CI) for the intervals < 5 µg/dL, 5–10 µg/dL, 10–15 µg/dL, 15–20 µg/dL, and > 20 µg/dL are shown.

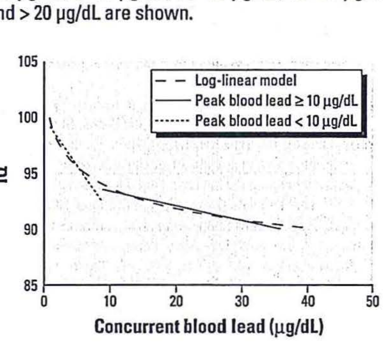

Figure 4. Log-linear model for concurrent blood lead concentration along with linear models for concurrent blood lead levels among children with peak blood lead levels above and below 10 µg/dL.

There are other predictors of neurodevelopmental outcomes that we did not examine in this pooled analysis, such as maternal depression. The omission of unmeasured variables may produce residual confounding (Pocock et al. 1994). Still, in studies that did examine other relevant covariates, such as breast-feeding and iron status, the estimated effect of lead was not altered appreciably (Canfield et al. 2003; Needleman et al. 1990; Tong and Lu 2000). Finally, each of the cohorts has unique limitations that raise questions about the validity and generalizability of their findings. Nevertheless, the results of these analyses indicate that the results are robust and not dependent on the data from any one site.

The impact of low-level environmental lead exposure on the health of the public is substantial. This pooled analysis focused on intellectual deficits, but environmental lead exposure has been linked with an increased risk for numerous conditions and diseases that are prevalent in industrialized society, such as reading problems, school failure, delinquent behavior, hearing loss, tooth decay, spontaneous abortions, renal disease, and cardiovascular disease (Borja-Aburto et al. 1999; Dietrich et al. 2001; Factor-Litvak et al. 1999; Lin et al. 2003; Moss et al. 1999; Nash et al. 2003; Needleman et al. 2002; Schwartz and Otto 1991). Although only a few studies have examined the association of these conditions or diseases among individuals with blood lead levels < 10 µg/dL (Borja-Aburto et al. 1999; Lanphear et al. 2000; Moss et al. 1999; Schwartz and Otto 1991), the evidence is growing.

In conclusion, the results of this pooled analysis underscore the increasing importance of primary prevention as the consequences of lower blood lead concentrations are recognized. Although blood lead concentrations < 10 µg/dL in children are often considered "normal," contemporary blood lead levels in children are considerably higher than those found in preindustrial humans (Patterson et al. 1991). Moreover, existing data indicate that there is no evidence of a threshold for the adverse consequences of lead exposure. Collectively, these data provide sufficient evidence to eliminate childhood lead exposure by banning all nonessential uses of lead and further reducing the allowable levels of lead in air emissions, house dust, soil, water, and consumer products (Lanphear 1998; Rosen and Mushak 2001).

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Intellectual Impairment in Children with Blood Lead Concentrations below 10 µg per Deciliter

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ABSTRACT

BACKGROUND

Despite dramatic declines in children's blood lead concentrations and a lowering of the Centers for Disease Control and Prevention's level of concern to 10 µg per deciliter (0.483 µmol per liter), little is known about children's neurobehavioral functioning at lead concentrations below this level.

METHODS

We measured blood lead concentrations in 172 children at 6, 12, 18, 24, 36, 48, and 60 months of age and administered the Stanford–Binet Intelligence Scale at the ages of 3 and 5 years. The relation between IQ and blood lead concentration was estimated with the use of linear and nonlinear mixed models, with adjustment for maternal IQ, quality of the home environment, and other potential confounders.

RESULTS

The blood lead concentration was inversely and significantly associated with IQ. In the linear model, each increase of 10 µg per deciliter in the lifetime average blood lead concentration was associated with a 4.6-point decrease in IQ (P=0.004), whereas for the subsample of 101 children whose maximal lead concentrations remained below 10 µg per deciliter, the change in IQ associated with a given change in lead concentration was greater. When estimated in a nonlinear model with the full sample, IQ declined by 7.4 points as lifetime average blood lead concentrations increased from 1 to 10 µg per deciliter.

CONCLUSIONS

Blood lead concentrations, even those below 10 µg per deciliter, are inversely associated with children's IQ scores at three and five years of age, and associated declines in IQ are greater at these concentrations than at higher concentrations. These findings suggest that more U.S. children may be adversely affected by environmental lead than previously estimated.

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Lead is neurotoxic, and young children are at particular risk for exposure.[1] Numerous studies indicate that blood lead concentrations above 10 μg per deciliter (0.483 μmol per liter) are associated with adverse outcomes on measures of intellectual functioning and social–behavioral conduct.[2-9] Such studies led to the identification of a blood lead concentration of 10 μg per deciliter or higher as a "level of concern" by the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO).[1,10]

It remains unclear whether lead-associated cognitive deficits occur at concentrations below 10 μg per deciliter. The CDC and WHO recognized that no evidence of a threshold existed for lead-associated deficits but noted an absence of research on the possible effects of blood lead concentrations below 10 μg per deciliter. Although some studies in which the average blood lead concentration was below 10 μg per deciliter have reported associations between the blood lead concentration and cognitive deficits, the analyses did not focus specifically on children whose concentrations remained below 10 μg per deciliter throughout life.[6,11] Other evidence suggesting lead-related deficits at concentrations below 10 μg per deciliter relied on linear extrapolation or on data unadjusted for important potential confounders such as maternal intelligence and the quality of caregiving.[12-15] We examined associations between low-level exposure to lead and children's performance on intelligence tests at the ages of three and five years in a population that included many children whose blood lead concentrations remained below 10 μg per deciliter.

METHODS

STUDY COHORT

Participants had been enrolled at five to seven months of age for a prior study of dust-control efficacy.[16] The children had been born between July 1994 and January 1995. Families were invited to participate in the current study when the children were 24 to 30 months of age. Thirty-six of the 276 children in the original study were excluded from the current study because of premature birth (less than 37 weeks' gestation), low birth weight (less than 2500 g), Down's syndrome, speech and hearing abnormalities, or death or because their parents were short-term custodians or lacked English proficiency. Of the 240 eligible participants, 54 were not assessed at the age of three years and 65 were not assessed at the age of five years because they missed appointments, relocated, declined to participate, or died. Children were tested at three and five years of age. The institutional review board of the University of Rochester Medical Center (Rochester, N.Y.) approved the study protocol, and parents or guardians of all children provided written informed consent.

ANALYSIS AND QUALITY CONTROL OF BLOOD SAMPLES

Blood lead concentrations were determined by electrothermal atomic absorption spectrometry (Wadsworth Laboratories). Lead values were calculated as the means of six analyses of each sample (SD, 0.03 μg per deciliter [0.001 μmol per liter]). The results of repeated analyses, separated by five days, were highly consistent (SD, 0.40 μg per deciliter [0.019 μmol per liter]) for blood lead concentrations below 20 μg per deciliter (0.966 μmol per liter). The limit of detection was 1.0 μg per deciliter (0.048 μmol per liter), and values below this limit were set to 1.0 μg per deciliter.[17]

ASSESSMENT OF INTELLIGENCE

Children were assessed with the Stanford–Binet Intelligence Scale, fourth edition, which tests vocabulary, spatial pattern analysis, quantitative ability, and memory. We used the composite score (mean [±SD], 100±16) to represent IQ, because it is similar to the IQ score of other intelligence tests.[18,19] A different examiner administered an abbreviated Stanford–Binet Scale at each age. Examiners were unaware of children's lead status. Scores from the abbreviated batteries are highly correlated with the Stanford–Binet full composite score (0.94 at the age of three years and 0.99 at the age of five years).[20] Because of the limited diagnostic value of Stanford–Binet subscales at these ages, the composite score was the dependent variable.[19]

LEAD EXPOSURE VARIABLES

Venous blood samples were obtained at 6, 12, 18, 24, 36, 48, and 60 months of age. Four exposure indexes were analyzed: lifetime average, peak, concurrent, and average blood lead concentration in infancy. The lifetime average blood lead concentration was estimated at 3 and 5 years of age by computing the area under the blood lead curve (AUC) from 6 through 36 months of age and from 6 through 60 months of age, respectively. Dividing the AUC by the corresponding age span yields an average concentration expressed in micrograms per deciliter.

The peak blood lead concentration is the child's highest measured lead concentration through the age of three or five years. The concurrent blood lead concentration is that measured on the day of cognitive testing. The average blood lead concentration in infancy is the AUC for values measured between 6 and 24 months of age.

The lifetime average blood lead concentration best reflects chronic exposure and was used as the primary exposure variable. The blood lead concentration was specified as an untransformed continuous variable. To compute the AUC, conditional means regression[21] was used to impute values for 72 of the 1168 age-specific lead values (6.2 percent).

COVARIATES

All analyses used the same set of prespecified covariates, which were based on established predictors of children's intellectual outcomes and those widely used in studies of pediatric lead exposure.[2-4,8,22,23] The following variables were used: the child's sex, birth weight, and iron status (defined by the serum transferrin saturation at three and five years of age) and the mother's IQ (determined with use of the abbreviated Stanford–Binet Intelligence Scale), years of education, race (self-assigned as white or nonwhite), tobacco use during pregnancy (user or nonuser), yearly household income, and the total score for the Home Observation for Measurement of the Environment Inventory.[24]

STATISTICAL ANALYSIS

Mixed-model methods[25,26] were used to estimate and test parameters in linear, polynomial, and semiparametric models that always included the child's sex and the mother's race and prenatal smoking status as fixed classification effects, and a lead measure, the child's iron status, and the mother's income, level of education, IQ, and Home Observation for Measurement of the Environment score as covariates. The child's IQ (the composite score on the Stanford–Binet Intelligence Scale) was the dependent variable. The longitudinal study design provides repeated measures of the IQ variable at the ages of three and five years, and the models also include a fixed classification factor for age and a random factor for individual children. The mother's income and level of education, the child's iron status, and all lead measures (except the infancy average) were measured at both time points and are time-varying covariates. The error structure for each child assumes different variances at each age and a covariance between ages; these were assumed to be the same for all children, and covariances between children were assumed to be negligible. All significance tests were two-tailed.

For a given lead variable, regressions were specified separately according to age, and the homogeneity of these estimates was tested (i.e., the interaction of age with lead concentration). In the absence of a difference between the age-specific estimates, their unweighted average (based on all available data) is the best estimate of the association between the blood lead concentration and IQ and is referred to as the overall estimate.

Regression diagnostics were carried out for the mixed models.[27] Only one value had a standardized residual of more than 3.0 (a child who had a low IQ and a low lead concentration). It did not pass a discordancy test[27] and was retained in all analyses.

The linear relations of IQ scores to lifetime average, concurrent, peak, and infancy average blood lead concentrations were estimated in the full sample. A second, parallel set of analyses estimated the relation between IQ and the lead concentration for children whose peak lead concentration was below 10 μg per deciliter. Observations for children who were three years of age were included in these calculations only when their maximal blood lead concentration through that age was below 10 μg per deciliter and were included at the age of five years only when their maximal concentration was below 10 μg per deciliter during the entire five-year span.

Nonlinearity in the relation between IQ and the blood lead concentration across the full range of lead values was examined with the use of the mixed models described above in two types of analyses: quadratic, cubic, and higher-degree polynomials were estimated for each lead variable; and semiparametric models were estimated with the use of parametric adjustment for covariates and penalized spline smoothing for the nonparametric relation between IQ and the blood concentration.[28] The semiparametric models estimate the regression locally and, unlike the polynomial models, do not require the restrictive assumption that the true relation between IQ and the blood lead concentration conforms to a particular parametric function. Inference is less well developed in the mixed semiparametric model, and confidence intervals are not reported.

RESULTS

A total of 198 children completed at least one assessment. Of these, 172 (86.9 percent) had complete data for all variables included in the model (305 ob-

Table 1. Characteristics of the Children at the Age of Five Years and of Their Mothers.*

Characteristic	Children with Complete Data (N=154)	Children with Incomplete Data (N=21)	Children Who Did Not Participate (N=65)
Children			
Age at testing (mo)	60.6±1.0	60.6±0.9	—
Female sex (%)	52.6	45.5	53.9
Weeks of gestation	39.5±1.2	39.8±1.0	39.4±1.2
Birth weight (g)	3295±405	3400±496	3304±473
Transferrin saturation (%)	22.5±9.4	23.5±6.6	—
Blood lead concentration (μg/dl)†			
Lifetime average	7.4±4.3	7.3±3.6	—
Peak	11.1±7.1	12.6±8.2	—
Concurrent	5.8±4.1	6.4±7.5	—
Average in infancy	7.0±3.8	7.4±3.4	7.2±4.1
IQ‡	89.8±11.4	85.6±12.2	—
Mothers			
No. of prenatal visits	11.1±4.1	10.2±5.0	10.4±3.7
HOME total score§	27.3±7.1	28.7±6.1	27.8±6.2
Yearly income >$15,000 (%)	35.7	45.5	—
Smoked during pregnancy (%)	20.1	38.1	27.7
Age at delivery (yr)	25.0±6.7	25.8±4.6	23.8±5.6
Parity	1.4±1.4	1.6±1.3	1.3±1.4
Nonwhite race (%)	73.4	68.2	66.2
Education >12 yr (%)	31.2	22.7	—
IQ‡	81.9±12.7	80.5±13.6	83.8±10.2

* Data obtained at the age of three years were similar to the data obtained at five years of age and are not shown. Differences among the groups were not significant ($P<0.05$) for any variable at the age of either three or five years. Plus–minus values are means ±SD. To convert values for lead to micromoles per liter, multiply by 0.0483.

† The lifetime average blood lead concentration was estimated at the ages of 3 and 5 years by computing the area under the blood lead curve (AUC) from 6 through 36 months and from 6 through 60 months, respectively, and then dividing the AUC by its corresponding age span to yield an average on the microgram-per-deciliter scale. The peak blood lead concentration was the child's highest measured blood lead concentration through the age of three or five years. The concurrent blood lead concentration was the concentration measured on the day of cognitive testing, and the average blood lead concentration in infancy was the AUC from 6 through 24 months.

‡ The Stanford–Binet Intelligence Scale, fourth edition (abbreviated), was used to assess IQ.

§ The Home Observation for Measurement of Environment Inventory (HOME) is an index that reflects the quality and quantity of emotional and cognitive stimulation in the home environment. The total score is the sum of 39 items, each scored as present (1) or absent (0), in six categories (maternal responsivity, acceptance of child, organization of the home environment, provision of play materials, maternal involvement with the child, and the variety of stimulation).

servations; 151 at the age of three years and 154 at the age of five years). There were no significant differences in the background characteristics among children with complete data, those with incomplete data, and those who did not participate (Table 1).

BLOOD LEAD CONCENTRATIONS

The mean blood lead concentration was lowest at the age of six months (3.4 μg per deciliter [0.164 μmol per liter]), was maximal at two years (9.7 μg per deciliter [0.483 μmol per liter]), and then decreased to 6.0 μg per deciliter (0.290 μmol per liter) at five years (Fig. 1). The lifetime average blood lead concentration was 7.7 μg per deciliter (0.372 μmol per liter) at the age of three years and 7.4 μg per deciliter (0.368 μmol per liter) at the age of five years. At three years of age, 86 children (57.0 percent) had a peak blood lead concentration below 10 μg per deciliter, as did 86 (55.8 percent) at the age of five years (71 of these children had such a concentration at both ages, and the remaining 30 had data at either three or five years).

INTELLIGENCE TEST RESULTS

The mean IQ was approximately 90 at both three and five years of age (Table 1), a value consistent with the sample demographics.[20,29] Children's IQ scores at three and five years of age were strongly correlated ($r=0.67$, $P<0.001$), and these scores were correlated with maternal IQ ($r=0.43$, $P<0.001$, and $r=0.52$, $P<0.001$, respectively), consistent with prior reports.[22,30] In other bivariate analyses, the associations among the children's IQ, the children's blood lead concentrations, and the other covariates were in the expected direction (Table 2).

BLOOD LEAD CONCENTRATIONS AND IQ

Before adjustment for covariates, all four lead measures were inversely and significantly associated with IQ at three and five years of age (Table 3). The associations did not differ significantly according to age. From the overall estimate, an increase in the lifetime average blood lead concentration of 1 μg per deciliter was associated with a decrease of 0.87 IQ point; estimates for concurrent blood lead concentrations and average concentrations in infancy were similar, whereas that for the peak lead concentration was somewhat smaller.

After adjustment for the nine additional covariates, there were significant inverse associations with IQ for all blood lead variables, with no significant differences according to age (Table 3). The overall estimate indicated that an increase in the lifetime average blood lead concentration of 1 μg per deciliter was associated with a change of −0.46 IQ point (95 percent confidence interval, −0.76 to −0.15). Estimated effects were similar for the concurrent blood lead concentration and the average blood lead concentration in infancy and smaller, but still significant, for peak lead concentrations (Table 3). Other significant predictors of the child's IQ were the same in all models: maternal IQ and income and the child's birth weight.

IQ AT BLOOD LEAD CONCENTRATIONS BELOW 10 μg PER DECILITER

To examine the relation between IQ and blood lead concentrations consistently below 10 μg per deciliter, linear models for each lead variable were estimated for the subgroup of children whose peak lead concentration was below 10 μg per deciliter. Without exception, the estimates were larger in this subgroup. Lifetime average, peak, and concurrent blood lead concentrations, but not the average in infancy, were inversely and significantly associated with IQ, both before and after adjustment for covariates (Table 4) and at both three and five years of age. The estimated overall difference in IQ for each increase in the lifetime average lead concentration of 1 μg per deciliter was −1.37 points (95 percent confidence interval, −2.56 to −0.17).

NONLINEAR ANALYSES

Nonlinear mixed models were analyzed with the use of the full range of blood lead values. Semiparametric analysis indicated a decline in IQ of 7.4 points for a lifetime average blood lead concentration of up to 10 μg per deciliter (Fig. 2). For lifetime average blood lead concentrations ranging from more than 10 μg per deciliter to 30 μg per deciliter, a more gradual decrease in IQ was estimated (approximately 2.5 points). An analysis using polynomial models confirmed this departure from linearity. The quadratic term was significant in the model for lifetime average blood lead concentration ($P=0.05$), and as the blood lead concentration increased from 1 to 10 μg per deciliter, the total change in IQ was −8.0 points (95 percent confidence interval, −12.9 to −3.2). Significant nonlinearity was also found for the relations between IQ and the peak lead concentration ($P=0.003$ for the quadratic term) and between IQ and the concurrent lead concentration ($P=0.007$ for the cubic term). The spline estimates for these variables had shapes similar to that for the lifetime average. The same covariates that were significant in the linear models were also significant in the nonlinear models.

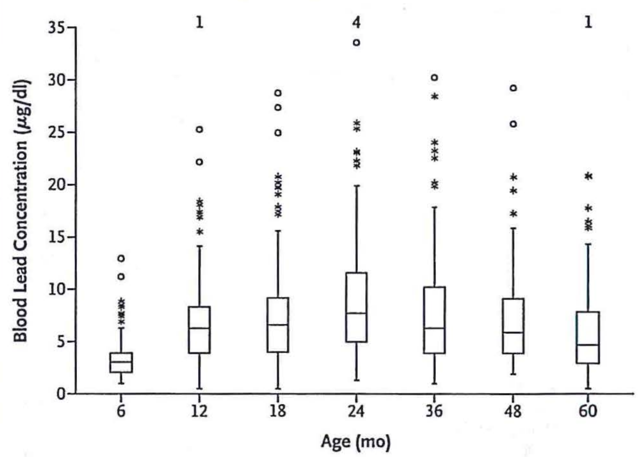

Figure 1. Distributions of Blood Lead Concentrations at Each Assessment.
In each box plot, the median value is indicated by the center horizontal line and the 25th and 75th percentiles are indicated by the lower and upper horizontal lines, respectively. The vertical lines represent 1.5 times the interquartile range, the asterisks represent values that are between 1.5 and 3 times the interquartile range, and circles represent values that are more than 3 times the interquartile range. The numbers at the top of the graph are the numbers of children with concurrent blood lead concentrations of more than 35 μg per deciliter. To convert values for lead to micromoles per liter, multiply by 0.0483.

DISCUSSION

Two findings from this investigation raise questions about the consequences of blood lead concentrations commonly found among U.S. children today. Of primary importance is that children's intellectual functioning at three and five years of age is inversely associated with blood lead concentrations, even when their peak concentrations remain below the CDC and WHO level of concern.[1,10] This finding was consistent for lifetime average, concurrent, and peak lead concentrations and in adjusted as well as unadjusted models. In the linear model involving the full range of lead values in this sample, the estimated IQ loss was 4.6 points for each increase in the blood lead concentration of 10 μg per deciliter, a result consistent with prior research in other cohorts.[2,11,31] In contrast, for children whose lead concentrations remained below 10 μg per deciliter, the estimated loss in IQ was considerably greater.

The second, related finding is that the relation

Table 2. Relation of Covariates to Lifetime Average Blood Lead Concentration and Mean IQ Score at Five Years of Age.*

Covariate†	No. of Children	Lifetime Average Blood Lead	IQ
		μg/dl	
Mothers			
Education level			
<12 yr	56	8.9±4.6	85.4±9.4
12 yr	50	6.4±3.5	91.2±12.4
>12 yr	48	6.6±4.1	93.4±10.8
Race‡			
Nonwhite	113	8.2±4.4	87.5±9.5
White	41	4.9±2.6	96.1±13.6
Income level			
$6,000	37	8.8±3.8	83.8±9.3
$6,001–$20,000	80	7.4±4.2	89.2±9.8
>$20,000	37	5.8±4.4	97.0±12.7
HOME total score§			
Low (<20)	24	10.1±3.2	85.8±8.1
Middle (20–30)	76	7.6±4.8	87.9±9.7
High (>30)	54	5.8±2.9	94.2±13.3
Prenatal smoking			
No	122	7.3±4.4	90.2±12.0
Yes	32	7.6±3.9	88.3±8.5
IQ¶			
Low (<75)	52	8.6±4.1	85.7±8.8
Middle (75–85)	45	7.7±5.0	86.9±8.5
High (>85)	57	5.9±3.3	95.9±12.8
Children			
Birth weight			
<3500 g	106	7.6±4.3	88.9±10.8
≥3500 g	48	6.9±4.1	91.8±12.3
Sex			
Male	73	7.6±3.9	88.3±12.5
Female	81	7.2±4.5	91.2±10.1
Transferrin saturation			
<20%	60	7.0±4.2	89.5±8.5
≥20%	94	7.6±4.3	90.0±12.9

* The lifetime average blood lead concentration was estimated at the ages of 3 and 5 years by computing the area under the blood lead curve (AUC) from 6 through 36 months and from 6 through 60 months, respectively, and then dividing the AUC by its corresponding age span to yield an average on the microgram-per-deciliter scale. Data obtained at the age of three years were similar to the data obtained at five years of age and are not shown. Plus–minus values are means ±SD. To convert values for lead to micromoles per liter, multiply by 0.0483.

† Some continuous variables were categorized for this analysis.

‡ Race was self-assigned as white or nonwhite.

§ The Home Observation for Measurement of Environment Inventory (HOME) is an index that reflects the quality and quantity of emotional and cognitive stimulation in the home environment. The total score is the sum of 39 items, each scored as present (1) or absent (0), in six categories (maternal responsivity, acceptance of child, organization of the home environment, provision of play materials, maternal involvement with the child, and the variety of stimulation).

¶ The Stanford–Binet Intelligence Scale, fourth edition (abbreviated), was used to assess IQ.

between children's IQ score and their blood lead concentration is nonlinear. The best estimate, from the semiparametric analysis, indicates a loss of 7.4 IQ points for a lifetime average blood lead concentration of up to 10 μg per deciliter. These findings suggest that the total lead-related impairment in this cohort is due largely to the initial IQ loss at blood lead concentrations of 10 μg per deciliter or less and that the linear model for children with peak concentrations of less than 10 μg per deciliter overestimates the lead-associated impairment.

Previous research is consistent with the interpretation that the effects of lead on IQ are proportionally greater at lower lead concentrations. A cross-sectional study of children with lead concentrations ranging from 3 to 34 μg per deciliter (0.145 to 1.643 μmol per liter) suggested a larger decrement in scores on ability tests over the range of 5 to 10 μg per deciliter (0.242 to 0.483 μmol per liter) than over the range from more than 10 through 20 μg per deciliter.[6] A second cross-sectional study that used data from the third National Health and Nutrition Examination Survey indicated greater possible effects on reading and math scores among children with blood lead concentrations below 5 μg per deciliter than among those with higher concentrations.[12] In addition, a prospective study[32] suggested that the effects of prenatal exposure to lead were proportionally greater at lower levels of exposure, and a meta-analysis[33] reported that studies in which average blood lead concentrations were below 15 μg per deciliter (0.725 μmol per liter) had larger slope estimates than studies in which concentrations were higher. However, we have documented this finding in children whose blood lead concentrations remained below 10 μg per deciliter, using a prospective design and adjusting for maternal intelligence and the quality of the home environment. Moreover, our findings were similar when the children were tested at three years and at five years of age.

Our results are also consistent with findings from meta-analyses that an increase in the blood lead concentration from 10 to 30 μg per deciliter is associated with a decline in IQ of 2 to 6 points.[7,33,34] Although the estimation was less precise for lead concentrations above 10 μg per deciliter in our study, the curve estimated by the semiparametric analysis suggests a loss of 2.5 IQ points as blood lead concentrations increase from more than 10 through 30 μg per deciliter. The estimates from meta-analyses reflect primarily findings from studies involving a low proportion of children with lead concentra-

Table 3. Unadjusted and Adjusted Changes in IQ for Each Increase in the Blood Lead Concentration of 1 μg per Deciliter for All Children in the Study.*

Type of Blood Lead Measurement	No. of Children	At 3 Years of Age		At 5 Years of Age		Overall	
		β±SE (95% CI)	P Value	β±SE (95% CI)	P Value	β±SE (95% CI)	P Value
Unadjusted estimate†							
Lifetime average	172	−0.74±0.18 (−1.09 to −0.39)	<0.001	−1.00±0.19 (−1.38 to −0.63)	<0.001	−0.87±0.16 (−1.19 to −0.55)	<0.001
Peak	172	−0.40±0.11 (−0.62 to −0.18)	<0.001	−0.47±0.11 (−0.70 to −0.25)	<0.001	−0.44±0.10 (−0.63 to −0.24)	<0.001
Concurrent‡	171	−0.60±0.15 (−0.89 to −0.31)	<0.001	−1.02±0.19 (−1.38 to −0.65)	<0.001	−0.81±0.14 (−1.09 to −0.53)	<0.001
Average in infancy (6–24 mo)	172	−0.73±0.21 (−1.15 to −0.31)	<0.001	−0.97±0.22 (−1.40 to −0.54)	<0.001	−0.85±0.19 (−1.23 to −0.47)	<0.001
Adjusted estimate§							
Lifetime average	172	−0.35±0.17 (−0.69 to 0.00)	0.05	−0.57±0.18 (−0.93 to −0.20)	0.003	−0.46±0.15 (−0.76 to −0.15)	0.004
Peak	172	−0.19±0.10 (−0.39 to 0.01)	0.06	−0.26±0.11 (−0.47 to −0.05)	0.02	−0.23±0.09 (−0.40 to −0.05)	0.01
Concurrent‡	171	−0.31±0.15 (−0.60 to −0.01)	0.04	−0.61±0.19 (−0.99 to −0.24)	<0.001	−0.46±0.14 (−0.74 to −0.18)	0.002
Average in infancy (6–24 mo)	172	−0.32±0.20 (−0.71 to 0.07)	0.10	−0.53±0.20 (−0.93 to −0.13)	0.01	−0.43±0.17 (−0.77 to −0.09)	0.02

* The lifetime average blood lead concentration was estimated at the ages of 3 and 5 years by computing the area under the blood lead curve (AUC) from 6 through 36 months and from 6 through 60 months, respectively, and then dividing the AUC by its corresponding age span to yield an average on the microgram-per-deciliter scale. The peak blood lead concentration was the child's highest measured blood lead concentration through the age of three or five years. The concurrent blood lead concentration was the concentration measured on the day of cognitive testing, and the average blood lead concentration in infancy was the AUC from 6 through 24 months. CI denotes confidence interval. β values are the estimated unstandardized regression coefficients.

† The unadjusted model includes only classification factors for age and for individual children.

‡ One child was lacking a concurrent blood lead measurement at the age of three years.

§ Estimates were adjusted for maternal IQ, race, level of education, use of tobacco during pregnancy, household income, and Home Observation for Measurement of Environment Inventory score, and the child's sex, birth weight, and iron status.

tions of 0 to 10 μg per deciliter. Our findings suggest that when linear estimation from such samples is extrapolated to lower blood lead concentrations, the results do not accurately reflect the greater magnitude of the lead-associated impairment at these lower concentrations.

The larger associations with IQ at lower lead concentrations may appear counterintuitive. Although we did not explore possible biologic mechanisms that could explain this finding, there is evidence that high concentrations of heavy metals may enhance cellular defense mechanisms and thereby lessen the rate at which additional damage occurs.[35]

As with any observational study, it is not possible to draw causal inferences from these findings. Instead, the plausibility of a causal interpretation must be judged by the consistency of findings from numerous epidemiologic studies and the relevant experimental studies in animals.[7,36,37] An inevitable limitation of the observational design is that it is not possible to control for all potentially confounding variables. However, the available evidence suggests that, in this area of research, a relatively small number of variables (e.g., the Home Observation for Measurement of the Environment score, socioeconomic status, and maternal IQ) are the primary confounders and that including other variables does not appreciably change the estimated

Table 4. Unadjusted and Adjusted Changes in IQ for Each Increase in the Blood Lead Concentration of 1 μg per Deciliter for Children with Peak Blood Lead Concentrations below 10 μg per Deciliter.*

Type of Blood Lead Measurement	No. of Children	At 3 Years of Age		At 5 Years of Age		Overall	
		β±SE (95% CI)	P Value	β±SE (95% CI)	P Value	β±SE (95% CI)	P Value
Unadjusted estimate†							
Lifetime average	101	−2.30±0.67 (−3.64 to −0.96)	<0.001	−2.54±0.74 (−4.01 to −1.07)	<0.001	−2.42±0.63 (−3.67 to −1.17)	<0.001
Peak	101	−2.09±0.58 (−3.25 to −0.93)	<0.001	−2.12±0.60 (−3.32 to −0.91)	<0.001	−2.10±0.53 (−3.16 to −1.04)	<0.001
Concurrent	101	−2.19±0.49 (−3.18 to −1.21)	<0.001	−2.56±0.58 (−3.71 to −1.40)	<0.001	−2.38±0.45 (−3.26 to 1.49)	<0.001
Average in infancy (6–24 mo)	105	−1.29±0.67 (−2.61 to 0.04)	0.06	−1.58±0.67 (−2.92 to −0.24)	0.02	−1.43±0.61 (−2.65 to −0.21)	0.02
Adjusted estimate‡							
Lifetime average	101	−1.22±0.66 (−2.53 to 0.09)	0.07	−1.52±0.71 (−2.94 to −0.09)	0.04	−1.37±0.60 (−2.56 to −0.17)	0.03
Peak	101	−1.36±0.55 (−2.46 to −0.27)	0.02	−1.44±0.56 (−2.55 to −0.33)	0.01	−1.40±0.48 (−2.37 to −0.44)	0.005
Concurrent	101	−1.36±0.51 (−2.37 to −0.35)	0.009	−1.79±0.60 (−3.00 to −0.60)	0.004	−1.58±0.46 (−2.50 to −0.65)	0.001
Average in infancy (6–24 mo)	105	−0.58±0.58 (−1.75 to 0.59)	0.32	−0.92±0.59 (−2.09 to 0.25)	0.12	−0.75±0.51 (−1.78 to 0.28)	0.15

* The lifetime average blood lead concentration was estimated at the ages of 3 and 5 years by computing the area under the blood lead curve (AUC) from 6 through 36 months and from 6 through 60 months, respectively, and then dividing the AUC by its corresponding age span to yield an average on the microgram-per-deciliter scale. The peak blood lead concentration was the child's highest measured blood lead concentration through the age of three or five years. The concurrent blood lead concentration was the concentration measured on the day of cognitive testing, and the average blood lead concentration in infancy was the AUC from 6 through 24 months. A total of 71 children were found to have a peak blood lead concentration below 10 μg per deciliter at both ages; an additional 15 children had a peak concentration below 10 μg per deciliter at three years of age but at five years of age had a higher concentration or were not tested, and another 15 children had a peak concentration below 10 μg per deciliter at five years but were not tested at three years. The total number of children in the analysis of the average concentration in infancy is 105 because in 4 children the peak blood lead concentration occurred after the age of 24 months. CI denotes confidence interval. β values are the estimated unstandardized regression coefficients.

† The unadjusted model includes only classification factors for age and for individual children.

‡ Estimates were adjusted for maternal IQ, race, level of education, use of tobacco during pregnancy, household income, and Home Observation for Measurement of Environment Inventory score, and the child's sex, birth weight, and iron status.

effect of lead.[11,38] For example, Tong and Lu compared the results of two empirical model-selection procedures using the Port Pirie cohort study.[38] One procedure resulted in a model with 4 covariates, and the other in a model with 14. The estimated effect of lead on IQ was nearly identical in the two models and was consistent with the linear estimates we report.

Our findings (both linear and nonlinear) for the four lead-exposure variables suggest a high degree of consistency for lifetime average, concurrent, and peak exposure. In their pattern of association with children's IQ scores, concurrent blood lead concentration was nearly identical to the lifetime average and the peak exposure. By contrast, the average blood lead concentration in infancy was less predictive of IQ, particularly for children whose lead concentrations remained below 10 μg per deciliter. We note, however, that these variables are by definition highly intercorrelated, and our results for them are not fully independent.

The results of any individual study depend, of

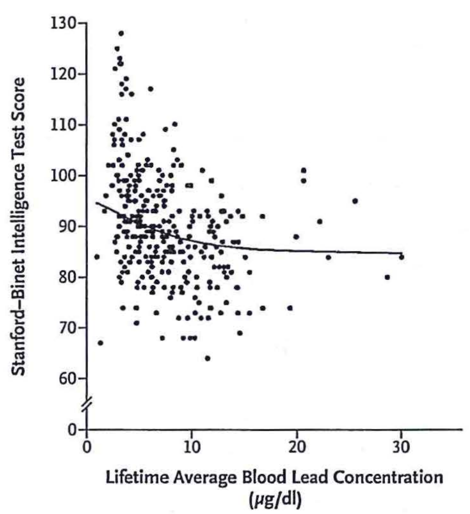

Figure 2. IQ as a Function of Lifetime Average Blood Lead Concentration.

IQ was assessed with use of the Stanford–Binet Intelligence Scale, fourth edition. The line represents the relation between IQ and lifetime average blood lead concentration estimated by the covariate-adjusted penalized-spline mixed model. Individual points are the unadjusted lifetime average blood lead and IQ values. To convert values for lead to micromoles per liter, multiply by 0.0483.

course, on the study population. Our study group included a cluster of children with high IQ scores and low lead concentrations, but these subjects were not unduly influential in the statistical models. Regardless, our findings should be replicated in other cohorts and with the use of other cognitive assessments.

The definition of an elevated blood lead concentration has been incrementally but consistently lowered over the past two decades. Our findings suggest that children with blood lead concentrations below 10 μg per deciliter merit more intensive investigation. These and other data suggest that there may be no threshold for the adverse consequences of lead exposure[6,7,33] and that lead-associated impairments may be both persistent and irreversible.[39-42] Furthermore, although typically investigated because of its neurotoxic properties, an elevated lead concentration is also a risk factor for other public health problems, including delinquency, cardiovascular disease, renal disease, and dental caries.[43-47]

Our findings suggest that considerably more U.S. children are adversely affected by environmental exposure to lead than previously estimated. Because there is no effective treatment for children with moderately elevated blood lead concentrations,[40] the collective evidence argues for a shift toward primary prevention of lead exposure in contrast to the current, almost exclusive emphasis on the treatment of children with elevated blood lead concentrations.[48-50]

Editor's note: Dr. Lanphear has served as an expert witness for the State of Rhode Island and the City of Milwaukee in lead-related cases, for which Children's Hospital (Cincinnati) is compensated.

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Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the Department of Agriculture.

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HOUSE BILL 479

E3, E2 8lr1114
CF 8lr2733

By: **Delegates Mosby, Ali, Angel, Barron, Gibson, Hettleman, J. Lewis, Morales, Proctor, Queen, and Sanchez**
Introduced and read first time: January 25, 2018
Assigned to: Judiciary

A BILL ENTITLED

AN ACT concerning

Juvenile Law – Lead Testing and Behavioral Health Assessment

FOR the purpose of requiring, instead of authorizing, the juvenile court to order a child to undergo blood lead level testing under certain circumstances; requiring, instead of authorizing, the juvenile court to direct the Department of Juvenile Services or another qualified agency to make a certain study concerning the child; requiring that, as part of the study, the Department conduct a comprehensive behavioral health assessment of the child; requiring, instead of authorizing, a court exercising criminal jurisdiction in a case involving a child to order the child to undergo blood lead level testing before trial under certain circumstances; requiring a court exercising criminal jurisdiction in a case involving a child to order the child to undergo a certain comprehensive behavioral health assessment before trial; and generally relating to juvenile offenders.

BY repealing and reenacting, with amendments,
Article – Courts and Judicial Proceedings
Section 3–8A–16.1 and 3–8A–17
Annotated Code of Maryland
(2013 Replacement Volume and 2017 Supplement)

BY repealing and reenacting, with amendments,
Article – Criminal Procedure
Section 4–205
Annotated Code of Maryland
(2008 Replacement Volume and 2017 Supplement)

BY adding to
Article – Criminal Procedure
Section 4–205.1
Annotated Code of Maryland

EXPLANATION: **CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.**
[Brackets] indicate matter deleted from existing law.

(2008 Replacement Volume and 2017 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article – Courts and Judicial Proceedings

3–8A–16.1.

(a) After a petition has been filed with the court under this subtitle, but before an adjudication, the court [may] **SHALL** order the child to undergo blood lead level testing **IF THE CHILD'S PARENT OR GUARDIAN CONSENTS.**

(b) A copy of the results of a test performed under subsection (a) of this section shall be provided to:

(1) The child;

(2) The child's parent or guardian;

(3) The child's counsel; and

(4) The State's Attorney.

3–8A–17.

(a) After a petition or a citation has been filed with the court under this subtitle, the court [may] **SHALL** direct the Department of Juvenile Services or another qualified agency to make a study concerning the child, the child's family, the child's environment, and other matters relevant to the disposition of the case.

(b) As part of a study under this section, the child or any parent, guardian, or custodian may be examined at a suitable place by a physician, psychiatrist, psychologist, or other professionally qualified person.

(C) AS PART OF A STUDY UNDER THIS SECTION, THE DEPARTMENT OF JUVENILE SERVICES SHALL CONDUCT A COMPREHENSIVE BEHAVIORAL HEALTH ASSESSMENT OF THE CHILD.

[(c)] **(D)** The report of a study under this section is admissible as evidence at a waiver hearing and at a disposition hearing, but not at an adjudicatory hearing. However, the attorney for each party has the right to inspect the report prior to its presentation to the court, to challenge or impeach its findings and to present appropriate evidence with respect to it.

Article – Criminal Procedure

4–205.

(a) Before trial, a court exercising criminal jurisdiction in a case involving a child [may] **SHALL** order the child to undergo blood lead level testing **IF THE CHILD'S PARENT OR GUARDIAN CONSENTS.**

(b) A copy of the results of a test performed under subsection (a) of this section shall be provided to:

(1) the child;

(2) the child's parent or guardian;

(3) the child's counsel; and

(4) the State's Attorney.

4–205.1.

BEFORE TRIAL, A COURT EXERCISING CRIMINAL JURISDICTION IN A CASE INVOLVING A CHILD SHALL ORDER THE CHILD TO UNDERGO A COMPREHENSIVE BEHAVIORAL HEALTH ASSESSMENT BY A PHYSICIAN, PSYCHIATRIST, PSYCHOLOGIST, OR ANY OTHER PROFESSIONALLY QUALIFIED PERSON.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect October 1, 2018.

HOUSE BILL 604

D3, M3, L2 8lr2339

By: **Delegates Mosby, Ali, Anderson, Clippinger, Conaway, Frush, Gibson, Glenn, Hayes, Lierman, McCray, McIntosh, Rosenberg, and M. Washington**

Introduced and read first time: January 29, 2018
Assigned to: Environment and Transportation and Judiciary

A BILL ENTITLED

AN ACT concerning

Baltimore City Lead Remediation and Recovery Act

FOR the purpose of establishing that this Act applies only to an action brought against a certain manufacturer of lead pigment for certain damages allegedly caused by the presence of lead–based paint in a residential building located in Baltimore City; providing that this Act does not apply to certain actions for certain damages arising from personal injury or death, certain actions against a person other than a manufacturer, or certain actions brought by a person other than the City of Baltimore, the Housing Authority of Baltimore City, or an owner of a residential building located in Baltimore City; providing that a plaintiff in an action under this Act is not required to prove that a specific manufacturer manufactured or produced the lead pigment used in the lead–based paint alleged to have caused the plaintiff's harm; providing that a certain manufacturer may be held liable for certain damages in an action under this Act under certain circumstances; establishing certain defenses to an action under this Act; providing for the apportionment of certain damages among certain manufacturers under certain circumstances; providing that failure to join a certain manufacturer in a certain action does not constitute failure to join a required party for any purpose; prohibiting a counterclaim or cross–claim from being filed in an action under this Act, subject to a certain exception; providing that certain provisions of this Act may not be construed or interpreted to prohibit a manufacturer from bringing certain claims against another manufacturer; providing that an action under this Act is not exclusive and is independent of and in addition to certain other rights, remedies, and causes of action; declaring a certain intent of the General Assembly; defining certain terms; providing for the application of this Act; and generally relating to the liability of manufacturers for damage caused in Baltimore City by lead pigment in lead–based paint.

BY adding to
Article – Courts and Judicial Proceedings
Section 3–2101 through 3–2106 to be under the new subtitle "Subtitle 21. Baltimore

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter deleted from existing law.

City Lead Remediation and Recovery Act"
Annotated Code of Maryland
(2013 Replacement Volume and 2017 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article – Courts and Judicial Proceedings

SUBTITLE 21. BALTIMORE CITY LEAD REMEDIATION AND RECOVERY ACT.

3–2101.

(A) IN THIS SUBTITLE THE FOLLOWING WORDS HAVE THE MEANINGS INDICATED.

(B) (1) "ABATEMENT" MEANS A SET OF MEASURES THAT ELIMINATE OR REDUCE LEAD–BASED PAINT HAZARDS IN A RESIDENTIAL BUILDING IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THE DEPARTMENT OF THE ENVIRONMENT.

(2) "ABATEMENT" INCLUDES:

(I) THE REMOVAL OF LEAD–BASED PAINT AND LEAD–CONTAMINATED DUST, THE CONTAINMENT OR ENCAPSULATION OF LEAD–BASED PAINT, THE REPLACEMENT OR DEMOLITION OF LEAD–BASED PAINTED SURFACES OR FIXTURES, AND THE REMOVAL OR COVERING OF LEAD–CONTAMINATED SOIL; AND

(II) PREPARATION, CLEANUP, DISPOSAL, AND POSTABATEMENT CLEARANCE TESTING ACTIVITIES ASSOCIATED WITH THE MEASURES DESCRIBED IN ITEM (I) OF THIS PARAGRAPH.

(C) "LEAD–BASED PAINT" MEANS LEAD–BASED PAINT AS DEFINED BY REGULATIONS ADOPTED BY THE DEPARTMENT OF THE ENVIRONMENT.

(D) (1) "MANUFACTURER" MEANS A PERSON THAT MANUFACTURED OR PRODUCED LEAD PIGMENT FOR SALE OR USE AS A COMPONENT OF LEAD–BASED PAINT OR A PREDECESSOR–IN–INTEREST OF THE PERSON.

(2) "MANUFACTURER" DOES NOT INCLUDE A PERSON OR A PREDECESSOR–IN–INTEREST OF THE PERSON THAT ONLY:

(I) SOLD LEAD PIGMENT OR LEAD–BASED PAINT AT RETAIL OR

WHOLESALE; OR

(II) APPLIED LEAD–BASED PAINT IN A RESIDENTIAL BUILDING.

3–2102.

(A) (1) THIS SUBTITLE APPLIES ONLY TO AN ACTION AGAINST A MANUFACTURER FOR PROPERTY DAMAGE OR CONSEQUENTIAL ECONOMIC DAMAGE ALLEGEDLY CAUSED BY THE PRESENCE OF LEAD–BASED PAINT IN A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY.

(2) DAMAGES THAT MAY BE CLAIMED IN AN ACTION UNDER THIS SUBTITLE INCLUDE:

(I) DAMAGES SUSTAINED BY THE HOUSING AUTHORITY OF BALTIMORE CITY OR THE OWNER OF A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY REQUIRED TO COMPLY WITH:

1. THE REQUIREMENTS OF TITLE 6, SUBTITLE 8 OF THE ENVIRONMENT ARTICLE;

2. AN ABATEMENT ORDER ISSUED BY A UNIT OF THE STATE OR A LOCAL GOVERNMENT; OR

3. A REQUIREMENT TO REPAIR LEAD–BASED PAINT DEFECTS UNDER § 8–211 OR § 8–211.1 OF THE REAL PROPERTY ARTICLE;

(II) EXPENSES VOLUNTARILY INCURRED BY THE HOUSING AUTHORITY OF BALTIMORE CITY OR THE OWNER OF A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY TO ABATE LEAD–BASED PAINT HAZARDS;

(III) EXPENSES INCURRED BY THE CITY OF BALTIMORE TO:

1. ENFORCE LEAD–BASED PAINT LAWS;

2. RAISE AWARENESS ABOUT LEAD POISONING; AND

3. CONDUCT OUTREACH AND SCREENING EFFORTS AIMED AT POPULATIONS AT RISK FOR LEAD POISONING;

(IV) THE REASONABLE FUTURE COSTS ASSOCIATED WITH THE TESTING, REMOVAL, ABATEMENT, OR ELIMINATION OF LEAD–BASED PAINT HAZARDS THAT EXIST IN A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY

AT THE TIME AN ACTION IS FILED; AND

(V) LOST RENT ATTRIBUTABLE TO THE PRESENCE OF LEAD–BASED PAINT IN A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY.

(B) THIS SUBTITLE DOES NOT APPLY TO AN ACTION:

(1) AGAINST A MANUFACTURER FOR DAMAGES ARISING FROM PERSONAL INJURY OR DEATH ALLEGEDLY CAUSED BY THE PRESENCE OF LEAD–BASED PAINT IN A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY;

(2) AGAINST ANY PERSON OTHER THAN A MANUFACTURER; OR

(3) BROUGHT BY ANY PERSON OTHER THAN:

(I) THE CITY OF BALTIMORE;

(II) THE HOUSING AUTHORITY OF BALTIMORE CITY; OR

(III) AN OWNER OF A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY.

3–2103.

(A) (1) IN AN ACTION UNDER THIS SUBTITLE:

(I) A PLAINTIFF IS NOT REQUIRED TO PROVE THAT A SPECIFIC MANUFACTURER MANUFACTURED OR PRODUCED THE LEAD PIGMENT CONTAINED IN THE LEAD–BASED PAINT ALLEGED TO HAVE CAUSED THE PLAINTIFF'S HARM; AND

(II) A MANUFACTURER MAY BE HELD LIABLE FOR DAMAGES ALLEGEDLY CAUSED BY THE PRESENCE OF LEAD–BASED PAINT IN A RESIDENTIAL BUILDING LOCATED IN BALTIMORE CITY, IF THE PLAINTIFF SHOWS THAT:

1. THE PLAINTIFF'S ALLEGED HARM WAS CAUSED BY LEAD PIGMENT USED AS A COMPONENT OF LEAD–BASED PAINT;

2. THE MANUFACTURER MANUFACTURED OR PRODUCED LEAD PIGMENT FOR SALE OR USE AS A COMPONENT OF LEAD–BASED PAINT; AND

3. THE MANUFACTURER BREACHED A LEGALLY RECOGNIZED DUTY TO THE PLAINTIFF UNDER MARYLAND LAW IN THE COURSE OF

SELLING, MANUFACTURING, PROMOTING, OR DISTRIBUTING LEAD PIGMENT.

(2) IT IS A DEFENSE TO AN ACTION UNDER THIS SUBTITLE THAT THE MANUFACTURER DID NOT SELL, MANUFACTURE, PROMOTE, OR DISTRIBUTE LEAD PIGMENT:

(I) IN BALTIMORE CITY; OR

(II) DURING THE TIME PERIOD WHEN THE LEAD–BASED PAINT ALLEGED TO HAVE CAUSED THE PLAINTIFF'S HARM WAS APPLIED.

(B) (1) EXCEPT AS PROVIDED IN PARAGRAPH (2) OF THIS SUBSECTION, IF MORE THAN ONE MANUFACTURER IS FOUND LIABLE IN AN ACTION UNDER THIS SUBTITLE, LIABILITY SHALL BE JOINT AND SEVERAL.

(2) (I) A MANUFACTURER MAY REDUCE ITS SHARE OF LIABILITY UNDER A VERDICT BY SHOWING THAT THE MANUFACTURER WAS RESPONSIBLE FOR A PARTICULAR SHARE OF THE MARKET FOR LEAD PIGMENT DURING THE TIME PERIOD WHEN THE LEAD–BASED PAINT ALLEGED TO HAVE CAUSED THE PLAINTIFF'S HARM WAS APPLIED.

(II) IF A MANUFACTURER SHOWS THAT THE MANUFACTURER WAS RESPONSIBLE FOR A PARTICULAR SHARE OF THE MARKET IN ACCORDANCE WITH SUBPARAGRAPH (I) OF THIS PARAGRAPH:

1. THE COURT SHALL REDUCE THE MANUFACTURER'S SHARE OF THE VERDICT TO BE THE SAME AS THE MANUFACTURER'S SHARE OF THE MARKET; AND

2. ANY MANUFACTURERS THAT HAVE NOT SHOWN THAT THEY WERE RESPONSIBLE FOR A PARTICULAR SHARE OF THE MARKET IN ACCORDANCE WITH SUBPARAGRAPH (I) OF THIS PARAGRAPH SHALL BE JOINTLY AND SEVERALLY RESPONSIBLE FOR THE REMAINING AMOUNT OF THE VERDICT.

(C) FAILURE TO JOIN A SPECIFIC MANUFACTURER IN AN ACTION UNDER THIS SUBTITLE DOES NOT CONSTITUTE FAILURE TO JOIN A REQUIRED PARTY FOR ANY PURPOSE.

(D) EXCEPT AS PROVIDED IN SUBSECTION (E) OF THIS SECTION, A COUNTERCLAIM OR CROSS–CLAIM MAY NOT BE FILED IN AN ACTION BROUGHT UNDER THIS SUBTITLE.

(E) THIS SECTION MAY NOT BE CONSTRUED OR INTERPRETED TO PROHIBIT

A MANUFACTURER FROM BRINGING CLAIMS AGAINST ANOTHER MANUFACTURER FOR CONTRIBUTION OR INDEMNIFICATION.

3–2104.

AN ACTION UNDER THIS SUBTITLE IS NOT EXCLUSIVE AND IS INDEPENDENT OF AND IN ADDITION TO ANY RIGHT, REMEDY, OR CAUSE OF ACTION AVAILABLE TO ANY PERSON OR PUBLIC ENTITY TO RECOVER DAMAGES CAUSED BY LEAD–BASED PAINT.

3–2105.

THE GENERAL ASSEMBLY DECLARES THAT:

(1) THE PURPOSE OF THIS SUBTITLE IS REMEDIAL AND ESSENTIAL TO THE PUBLIC INTEREST; AND

(2) IT IS THE INTENT OF THE GENERAL ASSEMBLY THAT THIS SUBTITLE BE LIBERALLY CONSTRUED BY THE COURTS.

3–2106.

THIS SUBTITLE MAY BE CITED AS THE BALTIMORE CITY LEAD REMEDIATION AND RECOVERY ACT.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall be construed to apply only prospectively and may not be applied or interpreted to have any effect on or application to any case filed before the effective date of this Act.

SECTION 3. AND BE IT FURTHER ENACTED, That this Act shall take effect October 1, 2018.

SENATE BILL 444

J1 8lr1189
CF 8lr3556

By: **Senators Nathan–Pulliam, Benson, Ferguson, Guzzone, Kelley, Madaleno, McFadden, Robinson, Rosapepe, and Young**
Introduced and read first time: January 25, 2018
Assigned to: Finance

A BILL ENTITLED

AN ACT concerning

Task Force on the Social Determinants of Health in Baltimore City

FOR the purpose of establishing the Task Force on the Social Determinants of Health in Baltimore City; providing for the purpose, duties, composition, cochairs, and staffing of the Task Force; requiring, to the extent practicable, the Task Force to reflect a certain diversity; requiring the Task Force to identify and examine certain social factors and develop and implement certain solutions for a certain purpose; requiring the Task Force to include certain subcommittees; authorizing the Task Force to apply for certain grants; requiring the Task Force to consult with a certain office for a certain purpose; providing for the appointment of chairs of the subcommittees of the Task Force; establishing a certain advisory board; requiring the Advisory Board to perform certain functions; providing for the composition and cochairs of the Advisory Board; providing for the terms of members of the Advisory Board; prohibiting members of the Task Force from receiving certain compensation and from receiving reimbursement for certain expenses; prohibiting members of the Advisory Board from receiving certain compensation, but authorizing the reimbursement of certain expenses; requiring the Task Force to submit a certain report to the Governor and the General Assembly on or before a certain date each year; defining certain terms; specifying the terms of certain initial members of the Advisory Board; and generally relating to the Task Force on the Social Determinants of Health in Baltimore City.

BY adding to
Article – Health – General
Section 13–3601 through 13–3608 to be under the new subtitle "Subtitle 36. Task Force on the Social Determinants of Health in Baltimore City"
Annotated Code of Maryland
(2015 Replacement Volume and 2017 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

EXPLANATION: **CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.**
[Brackets] indicate matter deleted from existing law.

Article – Health – General

SUBTITLE 36. TASK FORCE ON THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

13–3601.

(A) IN THIS SUBTITLE THE FOLLOWING WORDS HAVE THE MEANINGS INDICATED.

(B) "ADVISORY BOARD" MEANS THE ADVISORY BOARD FOR THE TASK FORCE ESTABLISHED UNDER § 13–3606(A) OF THIS SUBTITLE.

(C) "HEALTH INEQUITIES" MEANS THE UNFAIR AND AVOIDABLE DIFFERENCES IN HEALTH STATUS SEEN WITHIN AND BETWEEN COUNTRIES.

(D) "SOCIAL DETERMINANTS OF HEALTH" MEANS THE CONDITIONS IN WHICH INDIVIDUALS ARE BORN, GROW, LIVE, WORK, AND AGE THAT ARE:

(1) SHAPED BY THE DISTRIBUTION OF MONEY, POWER, AND RESOURCES AT GLOBAL, NATIONAL, AND LOCAL LEVELS; AND

(2) PRIMARILY RESPONSIBLE FOR HEALTH INEQUITIES.

(E) "TASK FORCE" MEANS THE TASK FORCE ON THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY ESTABLISHED UNDER § 13–3602 OF THIS SUBTITLE.

13–3602.

THERE IS A TASK FORCE ON THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

13–3603.

(A) THE PURPOSE OF THE TASK FORCE IS TO FUNCTION AS A MULTISECTOR COLLABORATIVE ACTION GROUP TO ADDRESS THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

(B) THE TASK FORCE SHALL:

(1) IDENTIFY AND EXAMINE THE NEGATIVE SOCIAL FACTORS THAT:

(I) ARE CAUSING HARDSHIP FOR RESIDENTS OF BALTIMORE CITY;

(II) ARE CYCLICAL IN NATURE; AND

(III) SPAN GENERATIONS; AND

(2) DEVELOP AND IMPLEMENT SOLUTIONS TO IMPROVE THE SOCIAL, MATERIAL, ECONOMIC, AND PHYSICAL CIRCUMSTANCES IN WHICH RESIDENTS OF BALTIMORE CITY LIVE, WORK, PLAY, AND WORSHIP SO THAT RESIDENTS OF BALTIMORE CITY AND THE COMMUNITIES IN WHICH THEY LIVE MAY HAVE THE THRIVING AND HIGH–QUALITY LIFE THEY DESERVE.

13–3604.

(A) (1) THE TASK FORCE CONSISTS OF THE FOLLOWING MEMBERS APPOINTED BY THE ADVISORY BOARD:

(I) REPRESENTATIVES OF COMMUNITY ORGANIZATIONS, ACADEMIC INSTITUTIONS, LAW ENFORCEMENT, AND STATE AND LOCAL GOVERNMENT;

(II) HEALTH CARE PROVIDERS;

(III) URBAN PLANNERS;

(IV) ENTREPRENEURS;

(V) MEMBERS OF THE BLACK MENTAL HEALTH ALLIANCE; AND

(VI) OTHER INDIVIDUALS WITH AN INTEREST IN THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

(2) TO THE EXTENT PRACTICABLE, THE MEMBERS APPOINTED TO THE TASK FORCE SHALL REFLECT THE RACIAL, ETHNIC, CULTURAL, AND GENDER DIVERSITY OF THE STATE.

(B) THE TASK FORCE SHALL INCLUDE FIVE SUBCOMMITTEES WITH EACH SUBCOMMITTEE ADDRESSING ONE OF THE FOLLOWING SUBJECT AREAS:

(1) EDUCATION, INCLUDING:

(I) THE LACK OF ADEQUATE SCHOOLS, EDUCATIONAL MATERIALS, AND OPPORTUNITIES FOR STUDENTS;

(II) LOW GRADUATION RATES; AND

(III) VIOLENCE AND ITS IMPACT ON THE ABILITY OF CHILDREN TO LEARN;

(2) HOUSING, INCLUDING:

(I) THE CONDITION OF HOUSING IN LOW–INCOME AREAS, INCLUDING THE PRESENCE OF PESTS, LEAD, AND MOLD IN HOUSING;

(II) BLIGHT;

(III) NEGLECTED AND BOARDED–UP HOUSING; AND

(IV) BROKEN PAVEMENT AND THE ABSENCE OF STREET LIGHTING IN RESIDENTIAL AREAS;

(3) WORKFORCE DEVELOPMENT AND JOBS, INCLUDING:

(I) CHRONIC UNEMPLOYMENT, UNDEREMPLOYMENT, AND THE LACK OF SUSTAINABLE EMPLOYMENT;

(II) JOB TRAINING OPPORTUNITIES AND THE NEED FOR ADDITIONAL JOB TRAINING PROGRAMS TO SPUR EMPLOYMENT OPPORTUNITIES; AND

(III) EMPLOYMENT OF RETURNING RESIDENTS;

(4) HEALTH AND HUMAN SERVICES, INCLUDING THE FOLLOWING CONDITIONS AFFECTING RESIDENTS:

(I) HIGH MORBIDITY AND PREMATURE MORTALITY;

(II) HIGH RATES OF HEPATITIS C, HIV/AIDS, DIABETES, HIGH BLOOD PRESSURE, CARDIOVASCULAR DISEASE, STROKE, SUICIDE, MENTAL ILLNESS, INFANT MORTALITY, AND ALCOHOL AND DRUG USE, INCLUDING OPIOID USE;

(III) LOW BIRTH RATES; AND

(IV) POOR AND INADEQUATE NUTRITION, INCLUDING POOR PRENATAL CARE; AND

(5) CIVIL UNREST AND SOCIAL JUSTICE, INCLUDING HOMICIDES, RAPES, ROBBERIES, DOMESTIC VIOLENCE, STREET VIOLENCE, GANG ACTIVITY, AND OTHER CRIMES AFFECTING NEIGHBORHOODS.

(C) THE TASK FORCE SHALL CONSULT WITH THE OFFICE OF MINORITY HEALTH AND DISPARITIES IN CARRYING OUT THE DUTIES OF THE TASK FORCE.

(D) THE TASK FORCE MAY APPLY FOR GRANTS FROM PUBLIC AND PRIVATE ENTITIES TO CARRY OUT THE DUTIES OF THE TASK FORCE.

13–3605.

(A) THE PRESIDENT OF THE UNIVERSITY OF MARYLAND, BALTIMORE, OR THE PRESIDENT'S DESIGNEE, SHALL APPOINT THE COCHAIRS OF THE TASK FORCE.

(B) THE COCHAIRS OF THE TASK FORCE SHALL JOINTLY APPOINT A CHAIR FOR EACH OF THE SUBCOMMITTEES ESTABLISHED UNDER § 13–3604(B) OF THIS SUBTITLE.

(C) THE UNIVERSITY OF MARYLAND, BALTIMORE, SHALL PROVIDE STAFF SUPPORT FOR THE TASK FORCE.

13–3606.

(A) THERE IS AN ADVISORY BOARD FOR THE TASK FORCE.

(B) THE ADVISORY BOARD CONSISTS OF THE FOLLOWING MEMBERS:

(1) THE COCHAIRS OF THE TASK FORCE APPOINTED UNDER § 13–3605(A) OF THIS SUBTITLE;

(2) THE CHAIRS OF THE SUBCOMMITTEES ESTABLISHED UNDER § 13–3604 OF THIS SUBTITLE APPOINTED UNDER § 13–3605(B) OF THIS SUBTITLE; AND

(3) TWO MEMBERS OF THE GENERAL ASSEMBLY, APPOINTED JOINTLY BY THE PRESIDENT OF THE SENATE AND THE SPEAKER OF THE HOUSE.

(C) (1) THE TERM OF A MEMBER OF THE ADVISORY BOARD SPECIFIED IN SUBSECTION (B)(1) OR (2) OF THIS SECTION IS 3 YEARS.

(2) AT THE END OF A TERM, A MEMBER CONTINUES TO SERVE UNTIL A SUCCESSOR IS APPOINTED AND QUALIFIES.

(3) A MEMBER WHO IS APPOINTED AFTER A TERM HAS BEGUN SERVES ONLY FOR THE REST OF THE TERM AND UNTIL A SUCCESSOR IS APPOINTED AND QUALIFIES.

(4) THE TERMS OF THE MEMBERS ARE STAGGERED AS REQUIRED BY THE TERMS PROVIDED FOR MEMBERS ON JULY 1, 2018.

(D) A MAJORITY OF THE MEMBERS PRESENT AT A MEETING SHALL CONSTITUTE A QUORUM.

(E) THE ADVISORY BOARD SHALL DETERMINE THE TIMES, PLACES, AND FREQUENCY OF ITS MEETINGS.

(F) THE COCHAIRS OF THE TASK FORCE SHALL BE THE COCHAIRS OF THE ADVISORY BOARD.

(G) THE ADVISORY BOARD SHALL:

(1) APPOINT THE MEMBERS OF THE TASK FORCE;

(2) MANAGE THE ACTIVITIES OF THE TASK FORCE; AND

(3) ADOPT BYLAWS OR RULES TO GOVERN THE OPERATIONS OF THE TASK FORCE.

13–3607.

(A) A MEMBER OF THE ADVISORY BOARD:

(1) MAY NOT RECEIVE COMPENSATION AS A MEMBER OF THE ADVISORY BOARD; BUT

(2) IS ENTITLED TO REIMBURSEMENT FOR EXPENSES UNDER THE STANDARD STATE TRAVEL REGULATIONS, AS PROVIDED IN THE STATE BUDGET.

(B) A MEMBER OF THE TASK FORCE:

(1) MAY NOT RECEIVE COMPENSATION AS A MEMBER OF THE TASK FORCE; AND

(2) IS NOT ENTITLED TO REIMBURSEMENT FOR EXPENSES UNDER THE STANDARD STATE TRAVEL REGULATIONS, AS PROVIDED IN THE STATE BUDGET.

13–3608.

ON OR BEFORE DECEMBER 1 EACH YEAR, THE TASK FORCE SHALL SUBMIT A REPORT TO THE GOVERNOR AND, IN ACCORDANCE WITH § 2–1246 OF THE STATE GOVERNMENT ARTICLE, THE GENERAL ASSEMBLY ON THE ACTIVITIES OF THE TASK FORCE.

SECTION 2. AND BE IT FURTHER ENACTED, That the terms of the initial members of the Advisory Board for the Task Force on the Social Determinants of Health in Baltimore City specified in § 13–3606(b)(1) and (2) of the Health – General Article, as enacted by Section 1 of this Act, shall expire as follows:

(1) two members in 2019;

(2) two members in 2020; and

(3) three members in 2021.

SECTION 3. AND BE IT FURTHER ENACTED, That this Act shall take effect July 1, 2018.

SENATE BILL 444

J1 8lr1189
CF 8lr3556

By: **Senators Nathan–Pulliam, Benson, Ferguson, Guzzone, Kelley, Madaleno, McFadden, Robinson, Rosapepe, and Young**

Introduced and read first time: January 25, 2018
Assigned to: Finance

A BILL ENTITLED

AN ACT concerning

Task Force on the Social Determinants of Health in Baltimore City

FOR the purpose of establishing the Task Force on the Social Determinants of Health in Baltimore City; providing for the purpose, duties, composition, cochairs, and staffing of the Task Force; requiring, to the extent practicable, the Task Force to reflect a certain diversity; requiring the Task Force to identify and examine certain social factors and develop and implement certain solutions for a certain purpose; requiring the Task Force to include certain subcommittees; authorizing the Task Force to apply for certain grants; requiring the Task Force to consult with a certain office for a certain purpose; providing for the appointment of chairs of the subcommittees of the Task Force; establishing a certain advisory board; requiring the Advisory Board to perform certain functions; providing for the composition and cochairs of the Advisory Board; providing for the terms of members of the Advisory Board; prohibiting members of the Task Force from receiving certain compensation and from receiving reimbursement for certain expenses; prohibiting members of the Advisory Board from receiving certain compensation, but authorizing the reimbursement of certain expenses; requiring the Task Force to submit a certain report to the Governor and the General Assembly on or before a certain date each year; defining certain terms; specifying the terms of certain initial members of the Advisory Board; and generally relating to the Task Force on the Social Determinants of Health in Baltimore City.

BY adding to
Article – Health – General
Section 13–3601 through 13–3608 to be under the new subtitle "Subtitle 36. Task Force on the Social Determinants of Health in Baltimore City"
Annotated Code of Maryland
(2015 Replacement Volume and 2017 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

EXPLANATION: **CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.**
[Brackets] indicate matter deleted from existing law.

Article – Health – General

SUBTITLE 36. TASK FORCE ON THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

13–3601.

(A) IN THIS SUBTITLE THE FOLLOWING WORDS HAVE THE MEANINGS INDICATED.

(B) "ADVISORY BOARD" MEANS THE ADVISORY BOARD FOR THE TASK FORCE ESTABLISHED UNDER § 13–3606(A) OF THIS SUBTITLE.

(C) "HEALTH INEQUITIES" MEANS THE UNFAIR AND AVOIDABLE DIFFERENCES IN HEALTH STATUS SEEN WITHIN AND BETWEEN COUNTRIES.

(D) "SOCIAL DETERMINANTS OF HEALTH" MEANS THE CONDITIONS IN WHICH INDIVIDUALS ARE BORN, GROW, LIVE, WORK, AND AGE THAT ARE:

(1) SHAPED BY THE DISTRIBUTION OF MONEY, POWER, AND RESOURCES AT GLOBAL, NATIONAL, AND LOCAL LEVELS; AND

(2) PRIMARILY RESPONSIBLE FOR HEALTH INEQUITIES.

(E) "TASK FORCE" MEANS THE TASK FORCE ON THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY ESTABLISHED UNDER § 13–3602 OF THIS SUBTITLE.

13–3602.

THERE IS A TASK FORCE ON THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

13–3603.

(A) THE PURPOSE OF THE TASK FORCE IS TO FUNCTION AS A MULTISECTOR COLLABORATIVE ACTION GROUP TO ADDRESS THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

(B) THE TASK FORCE SHALL:

(1) IDENTIFY AND EXAMINE THE NEGATIVE SOCIAL FACTORS THAT:

(I) ARE CAUSING HARDSHIP FOR RESIDENTS OF BALTIMORE CITY;

(II) ARE CYCLICAL IN NATURE; AND

(III) SPAN GENERATIONS; AND

(2) DEVELOP AND IMPLEMENT SOLUTIONS TO IMPROVE THE SOCIAL, MATERIAL, ECONOMIC, AND PHYSICAL CIRCUMSTANCES IN WHICH RESIDENTS OF BALTIMORE CITY LIVE, WORK, PLAY, AND WORSHIP SO THAT RESIDENTS OF BALTIMORE CITY AND THE COMMUNITIES IN WHICH THEY LIVE MAY HAVE THE THRIVING AND HIGH–QUALITY LIFE THEY DESERVE.

13–3604.

(A) (1) THE TASK FORCE CONSISTS OF THE FOLLOWING MEMBERS APPOINTED BY THE ADVISORY BOARD:

(I) REPRESENTATIVES OF COMMUNITY ORGANIZATIONS, ACADEMIC INSTITUTIONS, LAW ENFORCEMENT, AND STATE AND LOCAL GOVERNMENT;

(II) HEALTH CARE PROVIDERS;

(III) URBAN PLANNERS;

(IV) ENTREPRENEURS;

(V) MEMBERS OF THE BLACK MENTAL HEALTH ALLIANCE; AND

(VI) OTHER INDIVIDUALS WITH AN INTEREST IN THE SOCIAL DETERMINANTS OF HEALTH IN BALTIMORE CITY.

(2) TO THE EXTENT PRACTICABLE, THE MEMBERS APPOINTED TO THE TASK FORCE SHALL REFLECT THE RACIAL, ETHNIC, CULTURAL, AND GENDER DIVERSITY OF THE STATE.

(B) THE TASK FORCE SHALL INCLUDE FIVE SUBCOMMITTEES WITH EACH SUBCOMMITTEE ADDRESSING ONE OF THE FOLLOWING SUBJECT AREAS:

(1) EDUCATION, INCLUDING:

(I) THE LACK OF ADEQUATE SCHOOLS, EDUCATIONAL MATERIALS, AND OPPORTUNITIES FOR STUDENTS;

(II) LOW GRADUATION RATES; AND

(III) VIOLENCE AND ITS IMPACT ON THE ABILITY OF CHILDREN TO LEARN;

(2) HOUSING, INCLUDING:

(I) THE CONDITION OF HOUSING IN LOW–INCOME AREAS, INCLUDING THE PRESENCE OF PESTS, LEAD, AND MOLD IN HOUSING;

(II) BLIGHT;

(III) NEGLECTED AND BOARDED–UP HOUSING; AND

(IV) BROKEN PAVEMENT AND THE ABSENCE OF STREET LIGHTING IN RESIDENTIAL AREAS;

(3) WORKFORCE DEVELOPMENT AND JOBS, INCLUDING:

(I) CHRONIC UNEMPLOYMENT, UNDEREMPLOYMENT, AND THE LACK OF SUSTAINABLE EMPLOYMENT;

(II) JOB TRAINING OPPORTUNITIES AND THE NEED FOR ADDITIONAL JOB TRAINING PROGRAMS TO SPUR EMPLOYMENT OPPORTUNITIES; AND

(III) EMPLOYMENT OF RETURNING RESIDENTS;

(4) HEALTH AND HUMAN SERVICES, INCLUDING THE FOLLOWING CONDITIONS AFFECTING RESIDENTS:

(I) HIGH MORBIDITY AND PREMATURE MORTALITY;

(II) HIGH RATES OF HEPATITIS C, HIV/AIDS, DIABETES, HIGH BLOOD PRESSURE, CARDIOVASCULAR DISEASE, STROKE, SUICIDE, MENTAL ILLNESS, INFANT MORTALITY, AND ALCOHOL AND DRUG USE, INCLUDING OPIOID USE;

(III) LOW BIRTH RATES; AND

(IV) POOR AND INADEQUATE NUTRITION, INCLUDING POOR PRENATAL CARE; AND

(5) CIVIL UNREST AND SOCIAL JUSTICE, INCLUDING HOMICIDES, RAPES, ROBBERIES, DOMESTIC VIOLENCE, STREET VIOLENCE, GANG ACTIVITY, AND OTHER CRIMES AFFECTING NEIGHBORHOODS.

(C) THE TASK FORCE SHALL CONSULT WITH THE OFFICE OF MINORITY HEALTH AND DISPARITIES IN CARRYING OUT THE DUTIES OF THE TASK FORCE.

(D) THE TASK FORCE MAY APPLY FOR GRANTS FROM PUBLIC AND PRIVATE ENTITIES TO CARRY OUT THE DUTIES OF THE TASK FORCE.

13–3605.

(A) THE PRESIDENT OF THE UNIVERSITY OF MARYLAND, BALTIMORE, OR THE PRESIDENT'S DESIGNEE, SHALL APPOINT THE COCHAIRS OF THE TASK FORCE.

(B) THE COCHAIRS OF THE TASK FORCE SHALL JOINTLY APPOINT A CHAIR FOR EACH OF THE SUBCOMMITTEES ESTABLISHED UNDER § 13–3604(B) OF THIS SUBTITLE.

(C) THE UNIVERSITY OF MARYLAND, BALTIMORE, SHALL PROVIDE STAFF SUPPORT FOR THE TASK FORCE.

13–3606.

(A) THERE IS AN ADVISORY BOARD FOR THE TASK FORCE.

(B) THE ADVISORY BOARD CONSISTS OF THE FOLLOWING MEMBERS:

(1) THE COCHAIRS OF THE TASK FORCE APPOINTED UNDER § 13–3605(A) OF THIS SUBTITLE;

(2) THE CHAIRS OF THE SUBCOMMITTEES ESTABLISHED UNDER § 13–3604 OF THIS SUBTITLE APPOINTED UNDER § 13–3605(B) OF THIS SUBTITLE; AND

(3) TWO MEMBERS OF THE GENERAL ASSEMBLY, APPOINTED JOINTLY BY THE PRESIDENT OF THE SENATE AND THE SPEAKER OF THE HOUSE.

(C) (1) THE TERM OF A MEMBER OF THE ADVISORY BOARD SPECIFIED IN SUBSECTION (B)(1) OR (2) OF THIS SECTION IS 3 YEARS.

(2) AT THE END OF A TERM, A MEMBER CONTINUES TO SERVE UNTIL A SUCCESSOR IS APPOINTED AND QUALIFIES.

(3) A MEMBER WHO IS APPOINTED AFTER A TERM HAS BEGUN SERVES ONLY FOR THE REST OF THE TERM AND UNTIL A SUCCESSOR IS APPOINTED AND QUALIFIES.

(4) THE TERMS OF THE MEMBERS ARE STAGGERED AS REQUIRED BY THE TERMS PROVIDED FOR MEMBERS ON JULY 1, 2018.

(D) A MAJORITY OF THE MEMBERS PRESENT AT A MEETING SHALL CONSTITUTE A QUORUM.

(E) THE ADVISORY BOARD SHALL DETERMINE THE TIMES, PLACES, AND FREQUENCY OF ITS MEETINGS.

(F) THE COCHAIRS OF THE TASK FORCE SHALL BE THE COCHAIRS OF THE ADVISORY BOARD.

(G) THE ADVISORY BOARD SHALL:

(1) APPOINT THE MEMBERS OF THE TASK FORCE;

(2) MANAGE THE ACTIVITIES OF THE TASK FORCE; AND

(3) ADOPT BYLAWS OR RULES TO GOVERN THE OPERATIONS OF THE TASK FORCE.

13–3607.

(A) A MEMBER OF THE ADVISORY BOARD:

(1) MAY NOT RECEIVE COMPENSATION AS A MEMBER OF THE ADVISORY BOARD; BUT

(2) IS ENTITLED TO REIMBURSEMENT FOR EXPENSES UNDER THE STANDARD STATE TRAVEL REGULATIONS, AS PROVIDED IN THE STATE BUDGET.

(B) A MEMBER OF THE TASK FORCE:

(1) MAY NOT RECEIVE COMPENSATION AS A MEMBER OF THE TASK FORCE; AND

(2) IS NOT ENTITLED TO REIMBURSEMENT FOR EXPENSES UNDER THE STANDARD STATE TRAVEL REGULATIONS, AS PROVIDED IN THE STATE BUDGET.

13–3608.

ON OR BEFORE DECEMBER 1 EACH YEAR, THE TASK FORCE SHALL SUBMIT A REPORT TO THE GOVERNOR AND, IN ACCORDANCE WITH § 2–1246 OF THE STATE GOVERNMENT ARTICLE, THE GENERAL ASSEMBLY ON THE ACTIVITIES OF THE TASK FORCE.

SECTION 2. AND BE IT FURTHER ENACTED, That the terms of the initial members of the Advisory Board for the Task Force on the Social Determinants of Health in Baltimore City specified in § 13–3606(b)(1) and (2) of the Health – General Article, as enacted by Section 1 of this Act, shall expire as follows:

(1) two members in 2019;

(2) two members in 2020; and

(3) three members in 2021.

SECTION 3. AND BE IT FURTHER ENACTED, That this Act shall take effect July 1, 2018.

SENATE BILL 469

F1, J1 8lr1945
SB 537/17 – B&T

By: **Senators Salling, Bates, Robinson, and Waugh**
Introduced and read first time: January 26, 2018
Assigned to: Budget and Taxation

A BILL ENTITLED

AN ACT concerning

Public Health – School Buildings – Minimum Health Standards (Healthy Schools Program)

FOR the purpose of establishing the Healthy Schools Program in the State; specifying the purpose of the Program; requiring the Secretary of Health, in consultation with the Interagency Committee on School Construction, to adopt certain regulations establishing minimum standards designed to protect the health of the occupants of public school buildings; authorizing a representative of the Secretary to enter and inspect a public school to determine whether the public school is in violation of a certain regulation; prohibiting a person from refusing to grant certain access to a public school or to interfere with a certain inspection; requiring the Secretary to notify a certain school principal and local school system of certain information under certain circumstances; authorizing the Secretary to file a complaint in a certain court if a local school system fails to correct a certain violation by a certain date; specifying the content of a certain court order; defining certain terms; and generally relating to minimum health standards for public school buildings in the State.

BY adding to
Article – Health – General
Section 24–1701 through 24–1706 to be under the new subtitle "Subtitle 17. Healthy Schools Program"
Annotated Code of Maryland
(2015 Replacement Volume and 2017 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article – Health – General

SUBTITLE 17. HEALTHY SCHOOLS PROGRAM.

EXPLANATION: **CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.**
[Brackets] indicate matter deleted from existing law.

24–1701.

(A) IN THIS SUBTITLE THE FOLLOWING WORDS HAVE THE MEANINGS INDICATED.

(B) "PROGRAM" MEANS THE HEALTHY SCHOOLS PROGRAM ESTABLISHED UNDER § 24–1702 OF THIS SUBTITLE.

(C) "PUBLIC SCHOOLS" MEANS THE SCHOOLS IN THE PUBLIC ELEMENTARY AND SECONDARY EDUCATION SYSTEM OF THE STATE.

24–1702.

THERE IS A HEALTHY SCHOOLS PROGRAM IN THE STATE.

24–1703.

THE PURPOSE OF THE PROGRAM IS TO PROMOTE A HEALTHY ENVIRONMENT IN EACH PUBLIC SCHOOL THROUGH THE ADOPTION OF REGULATIONS ESTABLISHING MINIMUM STANDARDS DESIGNED TO PROTECT THE HEALTH OF THE OCCUPANTS OF PUBLIC SCHOOL BUILDINGS.

24–1704.

THE SECRETARY, IN CONSULTATION WITH THE INTERAGENCY COMMITTEE ON SCHOOL CONSTRUCTION, SHALL ADOPT REGULATIONS ESTABLISHING MINIMUM STANDARDS DESIGNED TO PROTECT THE HEALTH OF THE OCCUPANTS OF PUBLIC SCHOOL BUILDINGS, INCLUDING SPECIFICATIONS FOR:

(1) SUBJECT TO § 5–301 OF THE EDUCATION ARTICLE, INDOOR AIR QUALITY;

(2) DRINKING WATER QUALITY;

(3) ASBESTOS ENCAPSULATION OR REMOVAL;

(4) LEAD–BASED PAINT HAZARDS;

(5) TEMPERATURE RANGES IN CLASSROOMS;

(6) MOLD REMEDIATION; AND

(7) CONTROL OF PESTS.

24–1705.

(A) TO ENFORCE THIS SUBTITLE, A REPRESENTATIVE OF THE SECRETARY, AT ANY REASONABLE TIME, MAY ENTER AND INSPECT A PUBLIC SCHOOL ON AN ANNOUNCED OR UNANNOUNCED BASIS TO DETERMINE WHETHER A PUBLIC SCHOOL IS IN VIOLATION OF ANY REGULATION ADOPTED UNDER THIS SUBTITLE.

(B) A PERSON MAY NOT:

(1) REFUSE TO GRANT ACCESS TO A REPRESENTATIVE OF THE SECRETARY WHO REQUESTS TO ENTER AND INSPECT A PUBLIC SCHOOL UNDER THIS SECTION; OR

(2) INTERFERE WITH ANY INSPECTION UNDER THIS SECTION.

24–1706.

(A) IF THE SECRETARY FINDS THAT A PUBLIC SCHOOL IS IN VIOLATION OF ANY REGULATION ADOPTED UNDER THIS SUBTITLE, THE SECRETARY SHALL NOTIFY IN WRITING THE SCHOOL PRINCIPAL AND THE LOCAL SCHOOL SYSTEM:

(1) OF THE SPECIFIC FINDINGS;

(2) OF A SPECIFIC REASONABLE DATE BY WHICH THE LOCAL SCHOOL SYSTEM IS REQUIRED TO CORRECT THE VIOLATION SPECIFIED IN THE NOTICE; AND

(3) THAT, IF THE LOCAL SCHOOL SYSTEM FAILS TO CORRECT THE VIOLATION BY THE DATE SPECIFIED, THE SECRETARY MAY FILE A COMPLAINT IN THE CIRCUIT COURT FOR THE COUNTY WHERE THE PUBLIC SCHOOL IS LOCATED AS PROVIDED UNDER SUBSECTION (B) OF THIS SECTION.

(B) (1) THE SECRETARY MAY FILE A COMPLAINT IN THE CIRCUIT COURT FOR THE COUNTY WHERE THE PUBLIC SCHOOL IS LOCATED IF THE LOCAL SCHOOL SYSTEM FAILS TO CORRECT THE VIOLATION SPECIFIED IN THE NOTICE.

(2) A COMPLAINT FILED UNDER THIS SECTION MAY SEEK A COURT ORDER REQUIRING THE LOCAL SCHOOL SYSTEM TO:

(I) CORRECT THE VIOLATION SPECIFIED IN THE NOTICE; AND

(II) PREVENT THE VIOLATION FROM RECURRING.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect July 1, 2018.

SENATE BILL 524

N1, L2 8lr1353
CF 8lr0891

By: **Senators Kelley, Conway, King, Madaleno, Nathan–Pulliam, Pinsky, Ramirez, and Smith**

Introduced and read first time: January 29, 2018
Assigned to: Judicial Proceedings

A BILL ENTITLED

AN ACT concerning

Landlord and Tenant – Repossession for Failure to Pay Rent – Lead Risk Reduction Compliance

FOR the purpose of requiring an action for repossession for failure to pay rent to contain a certain statement on whether the property is an affected property under certain lead–based paint abatement laws; requiring a court to dismiss an action for repossession for failure to pay rent that does not include certain information on the status of the property as an affected property under certain circumstances; authorizing a court to adjourn a certain trial to enable either party to obtain documents or other proof of claim or defense under certain circumstances; repealing a certain prohibition against raising as an issue of fact a landlord's compliance with certain requirements related to lead–based paint abatement; requiring a rental property in Baltimore City to be in compliance with certain lead–based paint abatement requirements before a landlord may file a complaint for repossession of the property for failure to pay rent; authorizing a court in Baltimore City to adjourn a certain trial to enable a party to procure certain witnesses or obtain documents or other proof of claim or defense under certain circumstances; making stylistic changes; and generally relating to actions for repossession for failure to pay rent.

BY repealing and reenacting, without amendments,
Article – Real Property
Section 8–401(a)
Annotated Code of Maryland
(2015 Replacement Volume and 2017 Supplement)

BY repealing and reenacting, with amendments,
Article – Real Property
Section 8–401(b) and (c)
Annotated Code of Maryland
(2015 Replacement Volume and 2017 Supplement)

EXPLANATION: **CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.**
[Brackets] indicate matter deleted from existing law.

BY repealing and reenacting, with amendments,
The Public Local Laws of Baltimore City
Section 9–2 and 9–5(a)
Article 4 – Public Local Laws of Maryland
(1979 Edition and 1997 Supplement and 2000 Supplement, as amended)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article – Real Property

8–401.

(a) Whenever the tenant or tenants fail to pay the rent when due and payable, it shall be lawful for the landlord to have again and repossess the premises.

(b) (1) Whenever any landlord shall desire to repossess any premises to which the landlord is entitled under the provisions of subsection (a) of this section, the landlord or the landlord's duly qualified agent or attorney shall file the landlord's written complaint under oath or affirmation, in the District Court of the county wherein the property is situated:

(i) Describing in general terms the property sought to be repossessed;

(ii) Setting forth the name of each tenant to whom the property is rented or any assignee or subtenant;

(iii) Stating the amount of rent and any late fees due and unpaid, less the amount of any utility bills, fees, or security deposits paid by a tenant under § 7–309 of the Public Utilities Article;

(iv) Requesting to repossess the premises and, if requested by the landlord, a judgment for the amount of rent due, costs, and any late fees, less the amount of any utility bills, fees, or security deposits paid by a tenant under § 7–309 of the Public Utilities Article;

(v) If applicable, stating that, to the best of the landlord's knowledge, the tenant is deceased, intestate, and without next of kin; [and]

(VI) STATING WHETHER THE PROPERTY TO BE REPOSSESSED IS AN AFFECTED PROPERTY AS DEFINED IN § 6–801 OF THE ENVIRONMENT ARTICLE; AND

[(vi)] **(VII)** If the property to be repossessed is an affected property as defined in § 6–801 of the Environment Article, stating that the landlord has registered the affected property as required under § 6–811 of the Environment Article and renewed the registration as required under § 6–812 of the Environment Article and:

1. A. If the current tenant moved into the property on or after February 24, 1996, stating the inspection certificate number for the inspection conducted for the current tenancy as required under § 6–815(c) of the Environment Article; or

B. On or after February 24, 2006, stating the inspection certificate number for the inspection conducted for the current tenancy as required under § 6–815(c), § 6–817(b), or § 6–819(f) of the Environment Article; or

2. Stating that the owner is unable to provide an inspection certificate number because:

A. The owner has requested that the tenant allow the owner access to the property to perform the work required under Title 6, Subtitle 8 of the Environment Article;

B. The owner has offered to relocate the tenant in order to allow the owner to perform work if the work will disturb the paint on the interior surfaces of the property and to pay the reasonable expenses the tenant would incur directly related to the relocation; and

C. The tenant has refused to allow access to the owner or refused to vacate the property in order for the owner to perform the required work.

(2) THE COURT SHALL DISMISS A COMPLAINT THAT FAILS TO PROVIDE THE INFORMATION REQUIRED UNDER PARAGRAPH (1)(VI) AND (VII) OF THIS SUBSECTION UNLESS THE COURT ADJOURNS THE TRIAL ON THE COMPLAINT IN ACCORDANCE WITH SUBSECTION (C) OF THIS SECTION.

[(2)] **(3)** For the purpose of the court's determination under subsection (c) of this section the landlord shall also specify the amount of rent due for each rental period under the lease, the day that the rent is due for each rental period, and any late fees for overdue rent payments.

[(3)] **(4)** The District Court shall issue its summons, directed to any constable or sheriff of the county entitled to serve process, and ordering the constable or sheriff to notify the tenant, assignee, or subtenant by first–class mail:

(i) To appear before the District Court at the trial to be held on the fifth day after the filing of the complaint; and

(ii) To answer the landlord's complaint to show cause why the demand of the landlord should not be granted.

[(4)] **(5)** (i) The constable or sheriff shall proceed to serve the summons upon the tenant, assignee, or subtenant or their known or authorized agent as follows:

1. If personal service is requested and any of the persons whom the sheriff shall serve is found on the property, the sheriff shall serve any such persons; or

2. If personal service is requested and none of the persons whom the sheriff is directed to serve shall be found on the property and, in all cases where personal service is not requested, the constable or sheriff shall affix an attested copy of the summons conspicuously upon the property.

(ii) The affixing of the summons upon the property after due notification to the tenant, assignee, or subtenant by first–class mail shall conclusively be presumed to be a sufficient service to all persons to support the entry of a default judgment for possession of the premises, together with court costs, in favor of the landlord, but it shall not be sufficient service to support a default judgment in favor of the landlord for the amount of rent due.

[(5)] **(6)** Notwithstanding the provisions of paragraphs (1) through [(4)] **(5)** of this subsection, in Wicomico County, in an action to repossess any premises under this section, service of process on a tenant may be directed to any person authorized under the Maryland Rules to serve process.

[(6)] **(7)** (i) Notwithstanding the provisions of paragraphs [(3)] **(4)** through [(5)] **(6)** of this subsection, if the landlord certifies to the court in the written complaint required under paragraph (1) of this subsection that, to the best of the landlord's knowledge, the tenant is deceased, intestate, and without next of kin, the District Court shall issue its summons, directed to any constable or sheriff of the county entitled to serve process, and ordering the constable or sheriff to notify the occupant of the premises or the next of kin of the deceased tenant, if known, by personal service:

1. To appear before the District Court at the trial to be held on the fifth day after the filing of the complaint; and

2. To answer the landlord's complaint to show cause why the demand of the landlord should not be granted.

(ii) 1. The constable or sheriff shall proceed to serve the summons upon the occupant of the premises or the next of kin of the deceased tenant, if known, as follows:

A. If any of the persons whom the sheriff is directed to serve are found on the property or at another known address, the sheriff shall serve any such persons; or

B. If none of the persons whom the sheriff is directed to serve are found on the property or at another known address, the constable or sheriff shall affix an attested copy of the summons conspicuously upon the property.

2. The affixing of the summons upon the property shall conclusively be presumed to be a sufficient service to all persons to support the entry of a default judgment for possession of the premises, together with court costs, in favor of the landlord, but it shall not be sufficient service to support a default judgment in favor of the landlord for the amount of rent due.

(c) (1) If, at the trial on the fifth day indicated in subsection (b) of this section, the court is satisfied that the interests of justice will be better served by an adjournment to enable either party to procure their necessary witnesses **OR TO OBTAIN DOCUMENTS OR OTHER PROOF OF CLAIM OR DEFENSE**, the court may adjourn the trial for a period not exceeding **[**1 day**]** **7 DAYS**, except with the consent of all parties, the trial may be adjourned for a longer period of time.

(2) (i) **[**The information required under subsection (b)(1)(vi) of this section may not be an issue of fact in a trial under this section.

(ii)**]** If, when the trial occurs, it appears to the satisfaction of the court, that the rent, or any part of the rent and late fees are actually due and unpaid, the court shall determine the amount of rent and late fees due as of the date the complaint was filed less the amount of any utility bills, fees, or security deposits paid by a tenant under § 7–309 of the Public Utilities Article, if the trial occurs within the time specified by subsection **[**(b)(3)**]** **(B)(4)** of this section.

[(iii)**]** **(II)** 1. If the trial does not occur within the time specified in subsection **[**(b)(3)(i)**]** **(B)(4)(I)** of this section and the tenant has not become current since the filing of the complaint, the court, if the complaint so requests, shall enter a judgment in favor of the landlord for possession of the premises and determine the rent and late fees due as of the trial date.

2. The determination of rent and late fees shall include the following:

A. Rent claimed in the complaint;

B. Rent accruing after the date of the filing of the complaint;

C. Late fees accruing in or prior to the month in which the complaint was filed; and

D. Credit for payments of rent and late fees and other fees, utility bills, or security deposits paid by a tenant under § 7–309 of the Public Utilities

Article after the complaint was filed.

[(iv)] (III) In the case of a residential tenancy, the court may also give judgment in favor of the landlord for the amount of rent and late fees determined to be due together with costs of the suit if the court finds that the residential tenant was personally served with a summons.

[(v)] (IV) In the case of a nonresidential tenancy, if the court finds that there was such service of process or submission to the jurisdiction of the court as would support a judgment in contract or tort, the court may also give judgment in favor of the landlord for:

1. The amount of rent and late fees determined to be due;

2. Costs of the suit; and

3. Reasonable attorney's fees, if the lease agreement authorizes the landlord to recover attorney's fees.

[(vi)] (V) A nonresidential tenant who was not personally served with a summons shall not be subject to personal jurisdiction of the court if that tenant asserts that the appearance is for the purpose of defending an in rem action prior to the time that evidence is taken by the court.

(3) The court, when entering the judgment, shall also order that possession of the premises be given to the landlord, or the landlord's agent or attorney, within 4 days after the trial.

(4) The court may, upon presentation of a certificate signed by a physician certifying that surrender of the premises within this 4–day period would endanger the health or life of the tenant or any other occupant of the premises, extend the time for surrender of the premises as justice may require but not more than 15 days after the trial.

(5) However, if the tenant, or someone for the tenant, at the trial, or adjournment of the trial, tenders to the landlord the rent and late fees determined by the court to be due and unpaid, together with the costs of the suit, the complaint against the tenant shall be entered as being satisfied.

Article 4 – Baltimore City

9–2.

Whenever the tenant under any demise or agreement of rental, express or implied, verbal or written, of lands or tenements, whether real estate or chattels real within the limits of the City of Baltimore, shall fail to pay the rent thereunder when due and payable, it shall be lawful for the lessor to have again and repossess the premises so rented **SO LONG AS THE PREMISES COMPLIES WITH THE REGISTRATION, PERMIT, OR LICENSE**

REQUIREMENTS SET FORTH IN ARTICLE 13 OF THE BALTIMORE CITY CODE AND THE ENVIRONMENT ARTICLE OF THE ANNOTATED CODE OF MARYLAND. The filing of a complaint in summary ejectment under this subtitle, the trial of said cause and the granting of a judgment of restitution shall not preclude the plaintiff or the owner of said premises from filing and maintaining an independent suit for rent due and unpaid.

9–5.

(a) If, at the trial aforesaid, the judge shall be satisfied the interest of justice will be better served by an adjournment, **TO ENABLE A PARTY TO PROCURE NECESSARY WITNESSES OR OBTAIN DOCUMENTS OR OTHER PROOF OF A CLAIM OR DEFENSE, OR FOR OTHER PURPOSES OF THE JUDGE'S DISCRETION,** [he] **THE JUDGE** may adjourn the trial for a period not exceeding seven days, except by consent of the parties, and if at said trial or due adjournment, as aforesaid, it shall appear to the satisfaction of the judge before whom said complaint has been tried as aforesaid, that the rent or any part of the rent for said premises is actually due and unpaid, then the said judge shall give judgment in favor of said lessor for the amount of rent found due, with costs of suit, and shall order that said tenant and all persons claiming or holding by or under said tenant shall yield and render up possession of said premises unto said lessor, or unto [his] **THE LESSOR'S** duly qualified agent or attorney within 4 days thereafter; provided, however, that upon presentation of certificate signed by a practicing physician certifying that surrender of said premises within said period of 4 days would endanger the health or life of any occupant thereof, said judge may, at the trial or subsequent thereto, extend the time for such surrender of the premises upon such terms and for such period or periods as [he] **THE JUDGE** shall deem necessary and just. If the interval between the filing of the landlord's complaint and the trial of the cause shall be more than three days, any order or judgment of said court with respect to the payment of rent shall include all rent due and unpaid up to and including the day of trial; and the proceedings amended to set forth the basis of said judgment or order.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect October 1, 2018.

MDE Lead Commission Calendar for 2018- DRAFT

Month	Item State Agency	Item State Agency	Item Local Agency	Item Commission	Item Commission	Item Commission
January 2018	Meeting Cancelled					
February 2018	MDE Rental Registry Quarterly Update Annual Report to Governor			Lead Legislation		
March 2018	Update on DHMH Lead Screening		Baltimore City HUD Grant Program Quarterly Report	Lead Legislation		
April 2018	MDE Rental Registry Quarterly Update	MDE Update on Water Safety in Maryland		Lead Legislation		
May 2018		MDE Annual Enforcement and Compliance Report for 2016		Lead Legislation Recap		
June 2018	Update on DHMH Lead Screening	Office of Childcare Annual Update	Baltimore City HUD Grant Program Quarterly Report			
July 2018	MDE Rental Registry Quarterly Update		Baltimore City CLPP Fiscal Year Report (stats, emerging trends, outreach)	2019 Projected Lead Legislation		
August 2018	MDE Childhood Lead Registry Report – Annual Review					

Month	Item State Agency	Item State Agency	Item Local Agency	Item Commission	Item Commission	Item Commission
September 2018	Update on DHMH Lead Screening		Baltimore City HUD Grant Program Quarterly Report			
October 2018	MDE Rental Registry Quarterly Update					
November 2018	Review and Planning Meeting for 2019 (Items of Concern for Annual Report)			Lead Legislation Planning		
December 2017	Update on DHMH Lead Screening		Baltimore City HUD Grant Program Quarterly Report	Lead Legislation Planning		

Not yet on calendar:

DHCD Program Report

Baltimore City Housing

MARCH 1, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

March 1, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	benita.cooper@maryland
DAVIS, Anna L. ALD	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
McLAINE, Patricia PMcLaine	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
OAKS, Nathaniel (Senator)	Maryland Senate	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	on file
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Property Owner Pre 1950 Outside Baltimore City	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

GUESTS

Governor's Lead Commission Meeting Attendance Sheet

March 1, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
PT Connor	Connor	on File
Dawn Jong	AMA	
CEBM	BCHD	
Wes Stewart	GHHI	swstewart@ghhi.org
Jack Daniels	MD DHCD	jack.daniels2@maryland.gov
M. Taylor Templeton	GHHI	mtaylor@ghhi.org

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, March 1, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
2018 Calendar
Lead Legislation – HB 604, Office of Childcare Legislation

III. New Business
Update on Lead Screening – MDH

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, April 5, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
   A. Maryland Department of the Environment
   B. Maryland Department of Health
   C. Maryland Department of Housing and Community Development
   D. Baltimore City Health Department
   E. Baltimore City Department of Housing and Community Development
   F. Office of Childcare
   G. Maryland Insurance Administration
   H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
March 1, 2018

APPROVED Minutes

Members in Attendance

Anna L. Davis, Benita Cooper, Mary Beth Haller (via phone), Susan Kleinhammer Patricia McLaine, Cliff Mitchell, Paula Montgomery, Barbara Moore, Leonidas Newton Christina Peusch, Adam Skolnik

Members not in Attendance

Shana G. Boscak, Sen. Nathaniel Oaks, Manjula Paul, John Scott

Guests in Attendance

Shante Branch (MDE), Camille Burke (BCHD), Patrick Connor (Connor), Jack Daniels (DHCD), Dawn Joy (AMA), Wes Stewart (GHHI), M. Taylor-Templeton (GHHI)

Welcome and Introductions

Pat McLaine called the meeting to order at 9:40AM with welcome and introductions.

Approval of Minutes

A motion was made by Cliff Mitchell, seconded by Adam Skolnik to accept the February 2018 minutes as amended. All present Commissioners except one were in favor, one abstention.

Old Business

2018 Calendar – Draft Calendar for 2018 was passed out. Issue of Commission receiving a written report from agencies – Barbara Moore indicated that it was difficult to keep track of what is being said at a meeting if she is calling in. Adam Skolnik noted that if a verbal report or an agency update could be summarized in a written report, it would shorten our meeting. Paula Montgomery indicated she was confused about expectation of Commission for reporting. Cliff Mitchell stated he has no objections to slides; MDH has the technology to produce a webinar for people who are unable to join the meeting in person. Paula Montgomery noted that some dates don't jive with reporting mechanisms; MDE enforcement/compliance reports must be approved. Cliff Mitchell noted that there is a difference between an official agency report and the data. We are happy to share data. The Commission should make it clear what we want – Commission wants both data and reports. Adam Skolnik stated that the Commission has asked for some of the surveillance data before the report is published. The Commission can give excellent feedback to support the Department, for example, the reporting of the sources of lead, using numbers and percentages. Camille Burke stated that she recognizes that Baltimore City is one of the largest jurisdictions in the state but other jurisdictions should feel free to benefit from the expertise in the room. Pet Grant can invite representatives of other local jurisdictions; the

Commission has had regular participation from Baltimore County and Prince Georges County. Cliff Mitchell stated that MDH has a conference room with video conference capacity; if the meeting were held there, the Commission could invite lead case managers to present via video conference. Paula Montgomery said she would look into options available at MDE. Barbara Moore suggested that it would be useful to have quarterly updates from the lead case managers. Agencies with reports on the calendar were asked to confirm information with Pat McLaine.

Christina Peusch asked if the Commission could give an award. The Commission has considered this previously. Christina Peusch will think about possible Lead Commission awards or citations and make a proposal at the April meeting.

New Business

Lead Screening – Cliff Mitchell stated he would focus his presentation on the Medicaid programs. Since CHIP was reauthorized at the federal level, money is in the budget for next year to continue both programs. Program 1: About 20% of children with BLLs of 5µg/dL and above live in fifteen Program 1 jurisdictions. Medicaid has identified all children in these counties with BLLs of 5µg/dL and above in the past 2 years (10/15 – 10/17) – about 400. MDH is sending letters to the parents/guardians of these individuals about opportunities available at DHCD with request that interested persons contact MDH or their local health department (LHD). After completing a screening questionnaire to verify that the family is currently enrolled and eligible for Medicaid services, MDH or the LHD sends the family a 2 ½ page application form to sign and return to DHCD. Upon receipt of the application, the family is referred to DHCD; if the form is not returned, MDH or LHD will follow up. DHCD then schedules and conducts an assessment for lead on the home. If lead hazards are present, a treatment plan is developed. Program 2: This group includes fifteen LHDs and about 79.4% of the children with BLLs of 5µg/dL and higher. Program 2 focuses on children with BLLs of 5µg/dL and higher and children with asthma who are on controller medications. Medicaid is paying LHDs to do outreach using Community Health Nurses and Community Health Workers. Children are identified and their families are sent letters with the request to contact the LHD if interested. Outreach effort will be organized by the LHD. MDH is reporting process variables (number of letters, uptake, follow-through) and outcome variables (#kids, #houses tested, #housed remediated).

Cliff Mitchell stated that 3 children have been processed so far. Barbara Moore said she had an application completed in clinic and it went very smoothly. Jack Daniels stated that DHCD has made a lot of changes to the program and is expecting that this will work. Cliff Mitchell said the goal was to enroll as many kids as possible to the referral process, including kids idenitified from October 18, 2017 through February 28, 2018. Barbara Moore asked if kids over the age of six would be eligible; Cliff Mitchell said the program would be available to children under age 18 who meet eligibility and can benefit. Wes Stewart asked about capacity building using the nurse-CHW team, asking how they would document and if there was any way this visit could be used to increase documentation. Cliff Mitchell stated that a home visit inventory was now being developed but it was up to the LHD to fold this into their normal process. Baltimore City EH investigators use tablets and phones but the program form is not yet set up for use on tablets, so the program will probably start as paper-based. Cliff Mitchell will make his powerpoint presentation available to Pet Grant to distribute to Commissioners

With regards to BLL testing with hand-held instruments (Lead Care II) – Cliff Mitchell will talk with Dr. Keyvan and let Pat McLaine know when he can present updated information. Cliff Mitchell noted that the most common problem is false positives which are all required to have a venous BLL. National findings have identified a problem with false negatives when venous blood was used. Barbara Moore reported that Mount Washington Pediatrics was meeting with Lead Care II to discuss feasibility of running venous blood of children with high BLLs on the hand held instruments and then sending specimen to the lab to see how accurate the results are. Currently, Mount Washington does not have capacity for same day BLL testing and this might be helpful in situations where treatment is needed.

Review of Lead Legislation.
HB304/SB801 – Commission supports with amendments. Hearings scheduled 3/1 and 3/2. Letter sent 3/1, Pat McLaine to testify on 3/2.

HB479/SB1066 – Commission takes no position, Senate hearing 3/8

HB604 – no cross-file – in Judicial 3/7, Environment and Transportation 3/2. Holds paint manufacturers liable based on market share. Wes Stewart indicated that GHHI is supporting the bill. Bill tries to address owner concern by focusing on manufacturing. Issue of resources is key, also in wake of the decision in California. Many barriers to recovery. Bill focuses on Baltimore City, area with biggest problem and is a practical attempt to pass a bill. Adam Skolnik stated that the bill represents a novel approach, with rental housing excluded, and attempt to pass legislation. Wes Stewart noted that lead based paint is very unique; typically nuisances or hazards don't cause harm 100 years later. Mary Beth Haller stated that Baltimore City supports the bill. Anna Davis stated that since the language was cleaned up from last year and with the issue of resources being so important, she leans towards supporting the bill. A motion was made by Susan Kleinhammer seconded by Anna Davis that the Lead Commission support HB604. Six commissioners voted yes, and three commissioners abstained. The motion passed. Pat McLaine and Anna Davis will be in Annapolis tomorrow for bill hearings and will bring a letter of support tomorrow.

SB444 – Commission supports – has passed the Senate, no hearing set for House. Pat McLaine will contact Shirley Nathan-Pulliam re date for house hearing.

SB 469 – Commission supports. No cross-file; has not moved out of committee

SB 524 – Commission supports. Will be heard at Environment and Transportation Committee in House on 3/2. Property owners are opposed. Problems with MDE's database – it is not searchable and users are unable to tell if a property is lead-free. Wes Stewart stated the court wants guidance on how to proceed if there's a dispute or contradiction on completed form. Adam Skolnik indicated the issue is also "shall" vs "may". Anna Davis noted the bill helps to protect tenants who can't speak for themselves. Adam Skolnik stated the issue is lead free, non-affected properties. Patrick Connor noted that should be looking for Maryland Inspection Certificate – 3rd party property management agencies may not be accredited and may not have trained workers. Paula Montgomery noted that the part of the law that requires discovery focuses on registration and risk reduction.

Pat McLaine reported that she spoke with Manjula Paul and the Office of Childcare (OCC) has no legislation associated with lead pending. Paula Montgomery noted that MDE is working with OCC to make regulatory changes.

Future Meeting Dates
The next Lead Commission Meeting is scheduled for Thursday, April 5, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency Updates

Maryland Department of Environment – Paula Montgomery reported that the water testing regulations were posted in the Maryland Register with a 30 day public comment period that will be over soon. Paula Montgomery will send the link out to the Commissioners and will take a closer look at the regulations. Paula Montgomery is doing training for the new health care workers hired for the Part II programs. Two trainings have been completed, two more are scheduled. MDE generated a letter in early February to all Housing Authorities in Maryland regarding a case where a child was relocated to housing authority property and the property was out of compliance. The letter informs Housing Authorities of the law, meeting inspection requirements for HUD and the Maryland law requirement for dust testing. Baltimore County, Baltimore City and Annapolis have many pre-50 Housing Authority properties and have gotten on board.

Maryland Department of Health – Nothing more to report

Maryland Department of Housing and Community Development – Nothing to report

Baltimore City Health Department - Camille Burke reported that BCHD is supporting HB304 and will testify on behalf of Baltimore City. Myra Knowlton has retired; yesterday was her last day.

Baltimore City Housing and Community Development - Not present at meeting

Office of Child Care – Not present at meeting

Maryland Insurance Administration – Nothing to report

Public Comment
GHHI reported that HUD's lead grant budget was proposed at $160 million, up from $140 million.

Adjournment
A motion was made by Anna Davis to adjourn the meeting, seconded by Leonidas Newton. The motion was approved unanimously and the meeting was adjourned at 11:22 AM.

MDE Lead Commission Calendar for 2018- DRAFT

Month	Item State Agency	Item State Agency	Item Local Agency	Item Commission	Item Commission	Item Commission
January 2018	Meeting Cancelled					
February 2018	MDE Rental Registry Quarterly Update Annual Report to Governor			Lead Legislation		
March 2018	Update on MDH Lead Screening		Baltimore City HUD Grant Program Quarterly Report	Lead Legislation		
April 2018	MDE Rental Registry Quarterly Update	MDE Update on Water Safety in Maryland		Lead Legislation		
May 2018		MDE Annual Enforcement and Compliance Report for 2016		Lead Legislation Recap		
June 2018	Update on MDH Lead Screening	Office of Childcare Annual Update	Baltimore City HUD Grant Program Quarterly Report			
July 2018	MDE Rental Registry Quarterly Update		Baltimore City CLPP Fiscal Year Report (stats, emerging trends, outreach)	2019 Projected Lead Legislation		
August 2018	MDE Childhood Lead Registry Report – Annual Review					

Month	Item State Agency	Item State Agency	Item Local Agency	Item Commission	Item Commission	Item Commission
September 2018	Update on MDH Lead Screening		Baltimore City HUD Grant Program Quarterly Report			
October 2018	MDE Rental Registry Quarterly Update					
November 2018	Review and Planning Meeting for 2019 (Items of Concern for Annual Report)			Lead Legislation Planning		
December 2017	Update on MDH Lead Screening		Baltimore City HUD Grant Program Quarterly Report	Lead Legislation Planning		

Not yet on calendar:

DHCD Program Report

Baltimore City Housing

BILL NO.	TITLE	SUMMARY	LEGISLATOR	HEARING INFO	HISTORY	COMMISSION POSITION
HB 304	**Reduction of Lead Risk in Housing -- Elevated Blood Lead Levels**	Reducing from 10 micrograms per deciliter to 5 micrograms per deciliter the elevated blood lead level that initiates certain case management, notification, and lead risk reduction requirements.	Delegate Robbyn Lewis	Environment and Transportation Committee. House Hearing 3/2; Assigned to Judicial Proceedings in Senate. Senate Hearing 3/1	Cross-filed w/SB 801 Sponsored by Senator Oaks. Fiscal note available.	Support with amendments: cover all housing (owner occupied and rental); use CDC Reference Level. Need to add definition of "reference level" to 6-801.
HB 479/SB 1066	**Juvenile Law -- Lead Testing and Behavioral Health Assessment**	Requiring, instead of authorizing, the juvenile court to order a child to undergo blood lead level testing if the child's parent or guardian consents; requiring, instead of authorizing, the juvenile court to direct the Department of Juvenile Services or another qualified agency to make a certain study concerning the child; requiring that, as part of the study, the Department conduct a comprehensive behavioral health assessment of the child; etc.	Delegate Mosby Senator Conway	In Judiciary Committee; House Hearing 2/8. Referred to Judicial Proceedings in Senate 2/12/18. Senate Hearing 3/8	Fiscal note available.	No position
HB 604	**Baltimore City Lead Remediation and Recovery Act**	Establishing that the Act applies only to an action against a certain manufacturer of lead pigment for certain damages allegedly caused by the presence of lead-based paint in a residential building located in Baltimore City; providing that the Act does not apply to certain actions for certain damages arising from personal injury or death, to certain actions against a person other than a manufacturer, or to certain actions brought by a person other than the City of Baltimore, the Housing Authority of Baltimore City, or a certain owner; etc.	Delegate Mosby	Assigned jointly to Judiciary and Environment and Transportation Committees. Hearing in E&T 3/2; Hearing in Judiciary 3/7.	No Cross File. Fiscal Note not available	to discuss in March
SB 444	**Task Force on the Social Determinants of Health in Baltimore City**	Establishing the Task Force on the Social Determinants of Health in Baltimore City; providing for the duties, purpose, composition, chair, and staffing of the Task Force; requiring, to the extent practicable, the Task Force to reflect a certain diversity; requiring the Task Force to identify and examine certain social factors and develop and implement certain solutions for a certain purpose; authorizing the Task Force to apply for certain grants; requiring the Task Force to consult with the Office of Minority Health and Disparities; etc.	Sen. Nathan-Pulliam	First Reading in Finance 1/25. Hearing 2/14. 2/19 Favorable w/amendments Report by Finance (Adopted). Second Reading Passed with Amendments 2/19. Motion Special Order until 2/22 Rejected (14-31). Third Reading Passed Senate (45-1) 2/21. First Reading HGO 2/22.	Fiscal Note available	Support with amendment that Task Force include residents and representatives of housing interests
SB 469	**Public Health - School Buildings - Minimum Health Standards**	Establishing the Healthy Schools Program in the State to promote a healthy environment in the public schools by adopting minimum standards designed to protect the health of the occupants of public school buildings; requiring the Secretary of Health, in consultation with the Interagency Committee on School Construction, to adopt minimum standards to protect the health of the occupants of public school buildings; authorizing a representative of the Secretary to inspect a public school to make a certain determination; etc.	Sen. Salling	Introduced in 2017 as SB 537. Assigned to Budget and Taxation Committee. Hearing 2/21.	No cross-file. Fiscal note available	Support
SB 524	**Landlord and Tenant -- Repossession for Failure to Pay Rent -- Lead Risk Reduction Compliance**	Requiring an action for repossession for failure to pay rent to contain a certain statement on whether the property is an affected property under certain lead-based paint abatement laws; requiring a court to dismiss an action for repossession for failure to pay rent that does not include certain information on the status of the property as an affected property under certain circumstances; authorizing a court in Baltimore City to adjourn for up to 7 days under certain circumstances; etc.	Senator Kelley	Assigned to Judicial Proceedings in Senate. Hearing held 2/15. Assigned to Environment and Transportation in House. Hearing schedule 3/2	Cross-file with HB 852 sponsored by Del. Rosenberg. Fiscal Note available	Support

Lead Poisoning Prevention Commission

March 1, 2018

Dear Chairman Zirkin and members of the Judicial Proceedings Committee,

Thank you for the opportunity to provide testimony requesting that you support SB 801, the Reduction of Lead Risk in Housing – Elevated Blood Lead Levels. The Lead Poisoning Prevention Commission is charged with advising the Department of the Environment, the Legislature and the Governor regarding lead poisoning prevention in Maryland. The Commission includes representatives of state agencies, local government, insurers, child health advocates, health care providers, child advocates, parents, lead inspectors, childcare and rental property owners.

SB 801would require consistent follow-up (case management and environmental investigation) and provide the resources needed to identify lead hazards that are putting our young Maryland children at risk. This is an issue of priority as well as resources. The short term and long term costs of continuing to expose Maryland's young children to lead hazards in their homes is much higher than the costs to identify and address these hazards. If we do not take additional action to eliminate lead poisoning in Maryland, as a society we will continue to pay a much higher price in terms of school performance, crime, and future capabilities of our children.

The Lead Poisoning Prevention Commission urges a favorable vote on SB 801, lowering the level at which consistent follow-up and remediation of hazards occurs. We request the consideration of two amendments: (1) use CDC's reference level as the level for follow-up; (2) require abatement of lead hazards in all homes where these are identified, to include owner-occupied as well as rental properties. In addition, we recommend that the definition of "reference level" be added to 6-801.

Because more than 50% of owner-occupied housing and 60% of rental housing in Maryland was built before 1978, Maryland children continue to be at risk for lead exposure in their homes. Since 1996, our laws have focused on safety in rental property, where the vast majority of children with elevated blood lead levels (10µg/dL and higher) were identified. In the last 20 plus years, we have observed an increase in the number of new cases of children with an elevated blood lead level (EBL) occurring in owner occupied homes. In 2016, 24.8% of Maryland's new EBL cases occurred in owner occupied housing built before 1978 with similar percentages in Baltimore City (25%) and Maryland Counties (24.4%). This suggests to the Commission that additional efforts need to be focused on prevention in owner occupied housing. An environmental investigation will help identify the sources of lead in the child's environment so that steps can be taken to eliminate or reduce that exposure. In the majority of Maryland EBL cases, children have been exposed to lead in housing: paint, dust and soil.

In 2012, the Centers for Disease Control and Prevention (CDC) issued a report indicating that there is no safe level of lead in blood, recommending the Nation continue efforts to eliminate lead exposure, focusing efforts on children with blood lead levels above a national reference level, representing the highest 2.5% of blood lead levels of children aged one through five years in the nation, at the time 5µg/dL. Maryland's Childhood Lead Registry has reported on children with blood lead levels of 5µg/dL for several years but case management and environmental investigation have continued to be provided to children with a blood lead level of 10µg/dL and higher. Baltimore City currently offers case management to families of children with blood lead levels of 5-9µg/dL. In 2016, 1,729 Maryland children were identified with blood lead levels of 5µg/dL and higher. This number is expected to increase because Maryland implemented universal lead testing of one and two year olds starting in March 2016. In 2016, less than 50% of children ages one and two in Maryland had been tested for lead.

The Lead Poisoning Prevention Commission urges a favorable vote on SB 811. Members of the Commission are happy to address any questions or concerns of the Committee.

Sincerely,

Pat McLaine

Pat McLaine, RN, MPH, DrPH

Chair, Lead Poisoning Prevention Commission

Contact Information:

mclaine@umaryland.edu

443-520-9678

APRIL 5, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

April 5, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L.	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
MARTONICK, John P.	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

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GUESTS

Governor's Lead Commission Meeting Attendance Sheet

April 5, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Rachel Hessmutinder	MDH	
PT Connor	CONNOR	
NANCY REILMAN	MDE	NANCY.REILMAN@MARYLAND.GOV
Lan VanDeHei	MDE	Lan.VanDeHei@maryland.gov
Camille E Burke	BDE	—
Marcie Templeton	GHHI	[illegible]
[illegible]	GHHI	[illegible]
Jack Daniels	MD DHCD	jack.daniels2@maryland.gov.
LISA HORNE	MDH	[illegible]
Darla Arnold	Arc Environmental	410-659-9971

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, April 5, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. New Business
Report from MDE Water Supply Program
Update on MDE Rental Registry
Update on MDE Compliance and Enforcement
Other

III. Old Business
2018 Calendar
Lead Legislation
Other

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, May 3, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
- A. Maryland Department of the Environment
- B. Maryland Department of Health
- C. Maryland Department of Housing and Community Development
- D. Baltimore City Health Department
- E. Baltimore City Department of Housing and Community Development
- F. Office of Childcare
- G. Maryland Insurance Administration
- H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
April 5, 2018

APPROVED Minutes

Members in Attendance
Anna L. Davis, Mary Beth Haller, Susan Kleinhammer Patricia McLaine, Cliff Mitchell, Paula Montgomery, Barbara Moore, Leonidas Newton, Manjula Paul, Christina Peusch, Adam Skolnik

Members not in Attendance
Shana G. Boscak, Benita Cooper, John Martonick, John Scott

Guests in Attendance
Christina Ardito (MDE), Darla Arnold (Arc Environmental), Shante Branch (MDE), Camille Burke (BCHD), Lauren Burke, Simone Champagnie (BCHD), Patrick Connor (Connor), Jack Daniels (DHCD), Saieid Kasraei (MDE), Rachel Hess Mutinda (MDH), Lisa Horne (MDH), Christine Nagel (MDE), Nancy Reilman (MDE), Wes Stewart (GHHI), Marché Templeton (GHHI), Lan Van De Hei (MDE)

Welcome and Introductions
Pat McLaine called the meeting to order at 9:35 AM with welcome and introductions.

Approval of Minutes
A motion was made by Susan Kleinhammer, seconded by Adam Skolnik to accept the minutes as amended. All present Commissioners were in favor.

New Business
Report from MDE Water Supply Program
Chris Nagle and Christina Ardito reported on the Lead in School Drinking Water Regulations, effective April 9, 2018. Samples from all drinking water outlets in schools built before 1988 must be collected by July 1, 2018. Some schools have begun testing. Schools may apply for a deferral of testing: 1) 12 months if the school has a plan to test all outlets and has actionable steps if an elevated level of lead is found; 2) three years if prior testing was done at all outlets and none were elevated. Forms should be available April 9 and the website should be up and running April 9th. MDE is holding five regional training sessions for school facilities departments across the state. MDE has met with laboratories about testing protocol (250-mL sample and testing of all drinking water outlets). All sample results must be sent to MDE, MSDE and Local Health Departments; elevated sample results must be sent to MDH. The goal is to have a data tracking system where labs report results and results are available to all agencies. The system is not yet up and running, but the tracking form has been developed. MDE will have guidance on how to interpret lab reports. Elevated level of lead is 20 ppb in a 250-mL first-draw sample.

The new law impacts both public and non-public schools. Schools are required to put their data on their website within 30 days and to notify parents within 10 days. The first group of schools, built before 1988, should be complete by July 1, 2018; a lead ban was put in place for plumbing in 1988. The initial water sample is a first draw sample. If the lead level is elevated, schools must close access to the tap within 24 hours. They will then have to collect flush sample (i.e. normal operating conditions) within 5 days of notification of an elevated level of lead by the laboratory.

Barb Moore stated that at this time, there is no problem with primary care providers testing a child for lead at any age. But what to do about an elevated BLL is the issue. Cliff Mitchell stated that MDH is working on FAQs for this situation. It is important for people to understand the risk implications especially in areas where risks are generally lower. Information about potential risk and guidance about what to do is needed. MDH is happy to help develop new messages for primary care providers related to lead in drinking water exposure. This may be a bigger problem in upper grades, kids who haven't been tested recently for lead. It will be important for agencies to work together. Camille Burke suggested that MDH may want to host conversations with local health officers too. Cliff Mitchell said MDH would be happy to host such a meeting. Barb Moore stated that Mount Washington Pediatrics would like to be involved as well.

The law applies to all school facilities serving pre-K and school age children. It does not apply to pre-school and child care facilities including free-standing head start centers unless there is a private source of water. The regulations were posted March 30 in the Maryland Register. Paula Montgomery sent out copies earlier.

<u>MDE Compliance and Enforcement Report</u>
Paula Montgomery provided the report for the Department of the Environment (Department or MDE). At the end of the 2nd quarter (October - December 2017) there were a total of 2,920 lead inspector and contractor accreditations in effect with the Department. Of the amount, there were 345 new (or renewal) lead accreditations issued during the period. During the 2nd quarter the Department had a 98.8% permit turnaround rate (based on 60 day turnaround requirement) for received and approved lead accreditation applications. During the 2nd quarter, MDE staff conducted 562 inspections on Affected Properties and 20 oversight inspections on inspectors and/or contractors. During the 2nd quarter the Department received 3,144 new registrations bringing the total to 136,248 pre-1978 units currently registered for the quarter. In the 2nd quarter, 8,776 sites were issued a lead risk reduction certificate. Of that amount 5,420 properties were issued a full risk reduction certificate and 3,336 units met lead free standard. Meeting the lead free standard is an exemption from future registrations with the Department. With regards to enforcement actions, the Department issued 39 Complaint, Orders and Penalties. The Department collected $54,509 in penalties. Paula Montgomery said she would be able to provide comparisons across years at the end of the fiscal year for certificates, but could not determine the built date of the properties on the certificates because the Department does not collect that data at this time. She stated there is no difference between lead free and limited lead-free; it has to do with exemption.Adam Skolnik noted that the information is good, just what we've been asking

for, but requested that the Commission have data in writing in advance of the meeting. Paula Montgomery said this would not be a problem. Barbara Moore requests that the report include definitions of all categories.

Other
Paula Montgomery stated that Jeff Fretwell, Legislative Liaison for Appointments, had asked if the Commission had bylaws; it appeared to her that nothing has been developed. Paula said she is willing to look into this. Cliff Mitchell indicated that he serves on a number of boards and procedural rules are established in general procedures for the State. This would be a good question for the office of the AG. General statutes govern all boards and commissions. Cliff Mitchell stated he was not sure we are required to have bylaws and not sure it is necessary because all boards and commissions have governing statutes. Susan Kleinhammer asked what the concern was and why this was being brought up. Paula Montgomery said she believes the EJ Commission has bylaws. She said she will investigate governing statues, keep Pat McLaine in the loop and report on this at the next meeting in May.

Old Business
2018 Calendar – Pat McLaine stated she has gotten additional input and will provide a new calendar at the next meeting. The chair requests that all reports to the Commission be written and submitted in advance.

Lead Legislation – Anna Davis led the discussion of lead legislation currently being heard in Annapolis.
HB304/SB801 – reducing the blood lead level for follow-up from 10µg/dL to 5µg/dL. As of March 9, MDE and MDH are in support of the bill with request to change the BLL to the reference level and to include owner-occupied housing. The Commission submitted letter of support and Pat McLaine testified in support at the House hearing. The bill has not been brought up for a vote by the subcommittee. Wes Stewart urges that commissioners place calls to support the bill. Adam stated that this is not just a drop in the level for follow-up; we are requiring affected properties to do a risk reduction at a lower level. The lead problem needs to be addressed wherever the exposure is located. Paula Montgomery stated that unless MDE gets funding and positions, this won't work. In addition, the CDC Reference value was published at 3.5µg/dL this year. Cliff Mitchell indicated that Maryland is not currently planning to change the reference value of 5µg/dL for health care practitioners. Pat McLaine said the Commission should support following children at lower levels and advocate for sufficient resources for MDE to carry this out. Wes Stewart indicated it would be good to look at how much money is being generated by registration, registration fines and penalties now since most units are lead-free. The Lead Poisoning Prevention Special Fund includes all fines and penalties plus registration dollars. Paula Montgomery stated that MDE's budget is based on registration fees but not penalties and the Department is running a deficit. To move this bill forward now would be a huge lift; amendments are not in hand and time to meet with delegates and senators is limited.

HB419/SB1066 – House received unfavorable report in Committee; Senate received unfavorable report. Commission took no position on this bill. HB604 – was heard, received unfavorable report. Letter in support was submitted by Commission.
SB444 – Social Determinants of Health Bill – It looks like this bill will pass. Pat McLaine contacted Senator Nathan-Pulliam's office regarding support at house hearing but was told there was no cross-over bill yet.
SB469 – school buildings – stuck in committee, not moving.
SB524/HB852 – Senate bill still in committee. House bill passed in mid-March, referred to Judicial Proceedings. The bill appears to not have enough votes to move out of committee. Pat McLaine testified in support and sent letter of support from Commission

Patrick Connor asked if a bill to lower the blood lead level for action should be on the Commission's calendar for the fall. This would give the Commission the opportunity to look at bill language by September and meet with others about the importance of supporting such legislation in the fall. After discussion, a motion was made by Susan Kleinhammer to put the discussion of such a bill on the Commission's calendar for August, seconded by Anna Davis. Nine commissioners in support, one abstention, the motion passed.

General Assembly Representation to the Commission – at this time, the Commission no longer has any General Assembly representation. Cliff Mitchell indicated that appointments are made by the Speaker of the House and President of the Senate. He suggested that MDE's legislative office reach out to find out if interest has been expressed. Adam Skolnik stated that Environment and Transportation and JPR Committees will be totally redone after the elections, when committee assignments will be made by the President and Speaker. Several possibilities were mentioned. Commissioners were asked to let Pat McLaine know names of members of the General Assembly who might be interested.

Future Meeting Dates
The next Lead Commission Meeting is scheduled for Thursday, May 3, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment (MDE) – nothing new to report

Maryland Department of Health (MDH) – Cliff Mitchell reported that MDH has had much activity with Green and Healthy Homes Initiative. Nine counties have been trained up to make home visits to children with lead exposure and/or asthma. This group of counties includes 79.4% of Medicaid children with BLLs of 5μg/dL and higher, based on data from October 2015 through October 2017. Letters went out to all families regarding the availability of the DHCD program and home visit services. Counties are starting to enroll families. The CHIP program will continue in FY 2019 and MDH will be able to report on progress with home visiting and lead abatement in the future. MDH is also working with MDE to identify new children as additional tests are reported.

Maryland Department of Housing and Community Development (DHCD) – Jack Daniels reported that DHCD is still fine tuning the referral process and staff is focusing on making this program successful. An underwriter and an inspector have been hired. Starting July 1st, $4.167 million will be rolled over to FY19. The agency will get additional funds if current funding is spent before July 2018.

Baltimore City Health Department (BCHD) – Camille Burke introduced Simone Champagnie the first community health worker employed by the Childhood Lead Poisoning Prevention and Environmental Case Management Program. Letters have gone out to parents and BCHD is getting phone calls. They have also met with Head Start and Early Head Start sites. Over time, BCHD plans to integrate chronic disease management through their programs and is planning a learning calendar for kids and parents. BCHD is also piloting pop up testing events for BLL testing and will start with Maryland Physician's Care. Barbara Moore asked if BCHD could share with the commission some of the challenges that MCOs are encountering in testing; Camille Burke said she would do that.

Baltimore City Housing and Community Development – no representative present

Office of Child Care (OCC) – Manjula Paul met with OCC's data management group about incorporating data about age of housing, rental or owner occupied, and water source to the OCC database. The plan is to incorporate into the database by October 2018. Manjula Paul noted it will take two years to update all licensed and regulated childcare facilities.

Maryland Insurance Administration – no representative present

Public Comment – no public comments were offered.

Adjournment
A motion was made by Christina Peusch to adjourn the meeting, seconded by Barbara Moore. The motion was approved unanimously and the meeting was adjourned at 11:30AM.

MAY 3, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

NOTICE

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SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

May 3, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L.	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan SOK	Hazard ID Professional	
MARTONICK, John P. JPM	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia PMcLaine	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula pm	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

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GUESTS

Governor's Lead Commission Meeting Attendance Sheet

May 3, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Ron Wineholt	AOBA	
C E Burke	BCHD	
Bill Peach	HABC	
Dawn Joy	AMA	
Lan VanDe Hei	MDE	
Shante Branch	MDE	
Chris White	Arc	
Rachel Mutinda	MDH	
Kvaeen Green	GHHI	
Jack Daniels	DHCD	~~[illegible]~~ jack.daniels2@maryland.gov

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, May 3, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. New Business

Update on Point of Care Testing in Maryland	Cliff Mitchell
DHCD 3rd Quarter Update	Jack Daniels

III. Old Business
2018 Calendar
Lead Legislation
Other

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, June 7, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
A. Maryland Department of the Environment
B. Maryland Department of Health
C. Maryland Department of Housing and Community Development
D. Baltimore City Health Department
E. Baltimore City Department of Housing and Community Development
F. Office of Childcare
G. Maryland Insurance Administration
H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
May 3, 2018

APPROVED Minutes

Members in Attendance
Shana G. Boscak, Benita Cooper, Anna L. Davis, Mary Beth Haller, Susan Kleinhammer John P. Martonik, Patricia McLaine, Cliff Mitchell, Paula Montgomery, Leonidas Newton, Manjula Paul, Christina Peusch, Adam Skolnik

Members not in Attendance
Christina Peusch, John Scott, Barbara Moore

Guests in Attendance
Shante Branch (MDE), Camille Burke (BCHD), Jack Daniels (DHCD), Ludeen Green (GHHI) Dawn Joy (AMA), Rachel Hess Mutinda (MDH), Bill Peach (HABC), Lan Van De Hei (MDE) Chris White (Arc Environmental), Ron Wineholt (AOBA)

Welcome and Introductions
Pat McLaine called the meeting to order at 9:35 AM with welcome and introductions. She welcomed new Commissioner John Martonick who is representing pre-1950 Rental Owners not in Baltimore City.

Approval of Minutes
A motion was made by Adam Skolnik, seconded by Anna Davis to accept the April 2018 minutes as amended. Ten Commissioners were in favor, one abstained.

Old Business
Calendar for 2018 – After review of the calendar, a motion was made by Adam Skolnik to approve the calendar for this year, seconded by Anna Davis. All Commissioners were in favor.

State Legislation – Anna Davis noted that SB444 was the only bill supported by the Commission that passed during this legislative session, focused on identifying social factors that drive problems in Baltimore City. Pat McLaine noted that legislation recently passed in New York State enabling educators to learn the blood lead levels (BLL) of children in their schools with a corresponding obligation to provide educational services. Cliff Mitchell noted that MDH and MDE are loading BLLs from the CLR into IMMUNET on a monthly basis. Both Rhode Island and Connecticut have also made BLL data available electronically to providers..

New Business
Update on Point of Care (POC) Testing – Cliff Mitchell stated he has not yet talked with MDE about POC testing results for 2017 or with the Laboratories Administration about the results of

proficiency testing of practices now using POC. MDE did a phone reach-out to providers about not using venous specimens and a joint letter was sent to providers from MDE and MDH. Cliff Mitchell stated that a very small number of children were impacted and received follow-up testing. Cliff Mitchell indicated that MDH has no plans to change recommendations on the use of POC testing. He still thinks POC testing has significant advantages as a screening test for lead exposure. Pat McLaine indicated the Commission still wanted the information requested on POC testing

<u>DHCD Third Quarter Update</u> – Jack Daniels reported on progress with lead grant program, administered by the Special Loans Program; a one-page report showing grants and loans by counties was provided. Out of 100 units processed state-wide for lead hazard rehabilitation during the period 7/1/17 through 3/31/18, only three did not meet grant criteria (they received loans). The average per unit funding was $15,000. On the Eastern Shore, DHCD has done significant outreach, presentations to get non-profits and local groups involved. In Western Maryland, DHCD has also been doing more outreach and training of new staff.

<u>Open Meeting Act</u> – Pat McLaine reported that certain individuals have expressed an interest in being able to audio or video record the deliberations of this meeting. The Lead Commission Meeting is an Open meeting, subject to the laws of the State of Maryland and the opinions of the Open Meetings Compliance Board. As such, the meeting is open to the public and there is no expectation of discussions being private. While the Commission cannot prevent recording, it can set forth reasonable rules governing the recording of our meetings by any media. Pat McLaine suggested that the Commission establish a committee to develop a set of rules and policies that the Lead Commission would abide by. This would be a procedural not a policy change. Model rules are available from the Open Meetings Compliance Board and the Charles County Planning Commission. After discussion, Paula Montgomery, Anna Davis and Adam Skolnik volunteered to be on the Committee. They will meet briefly today following the Commission meeting and will report back their recommendations at the next meeting in June. Manjula Paul noted that free training on Maryland Open Meetings is available (Link to Maryland Open Meeting Act training: https://www.igsr.umd.edu/VLC/OMA/class_oma_intro1.php)

<u>Future Meeting Dates</u>
The next Lead Commission Meeting is scheduled for Thursday, June 7, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

<u>Agency updates</u>

Maryland Department of Environment – Paula Montgomery reported that MDE will have a table about lead at the Dundalk Housing Fair on Saturday, May 12. The Housing Fair is very well attended. A "Waste-free Lunch" Campaign is underway in middle schools around the state, focused on recycling and other health topics. MDE is developing training curricula for public schools. MDE is also scheduled to go to Shady Grove on May 19 for an outreach and education event. Finally, MDE is working with MDH to address needs of the refugee/immigrant population. They are planning a training session this summer and outreach to the refugee community. Paula Montgomery reported that last year approximately 45 immigrant children living in Maryland entered the US with high BLLs.

Maryland Department of Health – Cliff Mitchell praised GHHI for their recent summit on asthma which included a lot of discussion of lead outreach as a comprehensive approach. With regards to the MDH Childhood Lead Poisoning Prevention and Environmental Case Management Program, eight out of nine counties are up and running and seeing patients. Case Managers and Community Health Workers are going into homes, making referrals for hazard abatement, providing cleaning and cleaning equipment to families. The next step will include local health department staff reporting relevant information to the child's primary care provider to make sure they understand what is happening in the home. Cliff also noted that the Environmental Public Health Tracking program is funding IMMUNET development work to provide provider access to BLLs going forward. If schools have electronic access to BLLs, parents don't need to provide forms documenting BLL testing.

Maryland Department of Housing and Community Development – Jack Daniels reported that Program 1, providing lead abatement and lead-related activity repairs, is doing well, fine tuning the process, shortening information from the family and getting to inspection more quickly. The first two projects are going into construction. Letters have gone out to people identified with a good response from local health departments who are bringing people in. Some concern was raised about the consent language but that has been addressed. Two open staff positions are now filled. DHCD has a RFP out for contractor-enhanced weatherization and other activities. Medicaid will reinstate funding in July to a full $4.167 million.

Baltimore City Health Department – Camille Burke reported that BCHD has been holding seminars and interviews with students at Carver High School. BCHD is in the process of hiring a new attorney and is interviewing now. BCHD is partnering with Baltimore City Housing and Community Development (BCHCD) and has been talking with housing people and with lead people to link up code enforcement.

Baltimore City Housing and Community Development – Bill Peach, at HABC, one of the largest housing authorities in the State of Maryland, started a lead program early in the 1990s and said he thought the efforts were pretty successful. Now HABC is trying to transition poor people to using electronic documents. Communication is very important. Paula Montgomery noted that HABC has been doing a great job; she added she has visited HABC properties and observed good staff and good property maintenance.

Office of Child Care – Manjula Paul stated the asthma summit was great. A number of Head Start programs from Baltimore City and Baltimore County attended. Also Community Health

Workers were present, talking about the type of work they are doing. There is much interest at the Office of Child Care about water testing. Manjula Paul stated she has been reviewing articles about testing child care centers. All child care centers and family centers follow local code and test after two years. In Carroll County, testing is done for the initial application. In other counties, the county Health Department helps review the results. The OCC inspectors test water and check for presence of peeling chipping paint. Camille Burke said she would send information about testing at two years to the Commission. Paula Montgomery asked if a child care center had a risk assessment, should the Center test for water if risk is indicated? She asked if there was an Office of Child Care Advisory Council and requested that MDE be informed if such a group existed.

Maryland Insurance Administration – nothing to report

Public Comment
Ludeen Green from GHHI reported that their meeting yesterday on asthma had 100 participants, many from St. Mary's County and Baltimore City. The program looks at asthma as a healthy homes issue. Next month is Healthy Homes Month; outreach events are planned for summer. GHHI will announce plans for this work next month. With regards to legislation and HB 304: seven other states have adopted similar legislation. It is a good idea for communities to keep their foot on the gas pedal. Ludeen Green also reported that CDC's budget for lead had been increased from $17 to $30 million and HUD funding was increased from $145 to $230 million/year.

Adjournment
A motion was made by Adam Skolnik to adjourn the meeting, seconded by Anna Davis. The motion was approved unanimously and the meeting was adjourned at 10:45 AM.

MDE Lead Commission Calendar for 2018

Month	Item State Agency	Item State Agency	Item Local Agency	Item Commission	Item Commission	Item Commission
January 2018	Meeting Cancelled					
February 2018	MDE Rental Registry Quarterly			Lead Legislation		
March 2018	Update on MDH Lead Screening		Baltimore City HUD Grant Program Quarterly Report	Lead Legislation		
April 2018	MDE Update on Water Safety in Maryland	MDE Compliance and Enforcement Update		Lead Legislation		
May 2018	MDH Point of Care Testing	DHCD – 3rd Quarter Update		Lead Legislation Recap		
June 2018	Update on MDH Lead Screening		Baltimore City HUD Grant Program Quarterly Report			
July 2018		MDE Compliance and Enforcement Update		2019 Projected Lead Legislation		
August 2018		DHCD 4th Quarter Update	Baltimore City CLPP Fiscal Year Report (stats, emerging trends, outreach)			
September 2018	Update on MDH Lead Screening	Office of Childcare Annual Update	Baltimore City HUD Grant Program Quarterly Report			
October 2018	MDE Childhood Lead Registry Report – Annual Review					
November 2018		DHCD 1st Quarter Update		Lead Legislation Planning	Review and Planning Meeting for 2019	
December 2017	Update on MDH Lead Screening	MDE Planning Meeting for 2019 CLR Report	Baltimore City HUD Grant Program Quarterly Report	Lead Legislation Planning		

Updated May 2, 2018

ECONOMIC IMPACT REPORT FISCAL YEAR 2018 (1st, 2nd & 3rd Quarter 7/1/17-3/31/18)
SPECIAL LOAN PROGRAMS

PROGRAM	COUNTY	FISCAL YEAR	# UNITS	AMT OF FUNDS	# GRANTS	# LOANS	SOURCE	STAGE
LEAD HAZARD REHABILITATION	Allegany							
LEAD HAZARD REHABILITATION	Anne Arundel	2018	8	$133,688	7	1		
LEAD HAZARD REHABILITATION	Baltimore	2018	5	$95,244	5			
LEAD HAZARD REHABILITATION	Baltimore City	2018	83	$978,919	81	2		
LEAD HAZARD REHABILITATION	Calvert							
LEAD HAZARD REHABILITATION	Caroline							
LEAD HAZARD REHABILITATION	Carroll							
LEAD HAZARD REHABILITATION	Cecil							
LEAD HAZARD REHABILITATION	Charles							
LEAD HAZARD REHABILITATION	Dorchester	2018	1	$76,608	1			
LEAD HAZARD REHABILITATION	Frederick							
LEAD HAZARD REHABILITATION	Garrett							
LEAD HAZARD REHABILITATION	Harford							
LEAD HAZARD REHABILITATION	Howard							
LEAD HAZARD REHABILITATION	Kent							
LEAD HAZARD REHABILITATION	Montgomery							
LEAD HAZARD REHABILITATION	Prince George's	2018	1	$25,000	1			
LEAD HAZARD REHABILITATION	Queen Anne's							
LEAD HAZARD REHABILITATION	Somerset							
LEAD HAZARD REHABILITATION	St. Mary's							
LEAD HAZARD REHABILITATION	Talbot							
LEAD HAZARD REHABILITATION	Washington	2018	1	$98,178	1			
LEAD HAZARD REHABILITATION	Wicomico							
LEAD HAZARD REHABILITATION	Worcester	2018	1	$41,020	1			
	SUBTOTAL		100	$1,448,657	97	3		

JUNE 7, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

NOTICE

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SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

June 7, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L. ALD	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
MARTONICK, John P.	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia PMcLaine	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula PM	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

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GUESTS

Governor's Lead Commission Meeting Attendance Sheet

June 7, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
PT CONNOR	CONNOR	—
BILL PEACH	HABC	
Dawn Joy	AMA	
Mark Rehill[illegible]		
Carrie [illegible]	BCIH[illegible]	
Ludeen Green	GHHI	
LISA HOME	MDA	

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, June 7, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
Committee Report — Paula Montgomery

III. New Business
Update on MDH Lead Screening — Cliff Mitchell
Baltimore City HUD Grant Program Quarterly Report — Sheneka Frasier-Kyer

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, July 5, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
   A. Maryland Department of the Environment
   B. Maryland Department of Health
   C. Maryland Department of Housing and Community Development
   D. Baltimore City Health Department
   E. Baltimore City Department of Housing and Community Development
   F. Office of Childcare
   G. Maryland Insurance Administration
   H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
June 7, 2018

APPROVED Minutes

Members in Attendance
Anna L. Davis, Benita Cooper, Mary Beth Haller, Susan Kleinhammer, Patricia McLaine, Cliff Mitchell, Paula Montgomery, Barbara Moore (via phone), Leonidas Newton (via phone) Manjula Paul

Members not in Attendance
Shana G. Boscak, John Martonick, Christina Peusch, John Scott, Adam Skolnik

Guests in Attendance
Camille Burke (BCHD), Patrick Connor (Connor), Dan Foster, Ludeen Green (GHHI), Lisa Horne (MDH), Dawn Joy (AMA), Mark Petrillo (NJ), Bill Peach (HABC), Greg Sileo (BCHD)

Welcome and Introductions
Pat McLaine called the meeting to order at 9:35 AM with welcome and introductions.

New Business
Update on MDH Lead Screening – This item was moved to the beginning of the meeting at the request of Cliff Mitchell. Cliff Mitchell reported that there has been an uptick in rates for counties but data from the Childhood Lead Registry is not yet available. The testing increase has not been seen in all counties. MDH is doing a series of webinars for health care providers; the first one was yesterday (June 6th). MDH will also be meeting with Medicaid Managed Care Directors to help the Department to determine how best to reach out to health care providers to talk about testing, especially in areas with low screening rates, including Prince Georges and Southern Maryland counties. More activity will start in July. Screening data for 2017 has not yet been run. Cliff Mitchell indicated he was not sure if he could break out the data on 1 and 2 year olds earlier; the schedule for releasing a report is unclear. He requested contact information for health care organizations, providers, parent groups who might be interested.

As part of MDH outreach and assistance to providers, as of May 2018, new BLL tests are being reported into ImmuNet. Cliff Mitchell hopes to be able to put historic data into ImmuNet. This is a passive system – it does not inform practitioners that screening is needed. Cliff Mitchell stated that this was a soft roll-out. MDH will mention this to school health nurses in August.

Approval of Minutes
A motion was made by Cliff Mitchell, seconded by Anna Davis to accept the May 2018 minutes as amended. All present Commissioners were in favor and the minutes were approved.

Old Business

Committee Report – Paula Montgomery reported that she, Adam Skolnik and Anna Davis were tasked at the last meeting with coming up with a policy on recording Lead Commission meetings. They based their recommendation on the Opinion of Jeanny Pope, Assistant Attorney General (MDE) that the Committee has authority to establish policy based on the Open Meetings Act and the Open Meetings Compliance Board. The recommended policy, distributed at the meeting, was adopted from the Charles County Open Meeting Act Procedures and adapted to the Lead Commission. Minor edits were suggested. Ludeen Green from Green and Healthy Housing Initiative asked what the intent was for this request; Paula Montgomery indicated the intent was transparency. Susan Kleinhammer made a motion to accept the policy as revised as a Commission rule. The motion was seconded by Mary Beth Haller, all Commissioners were in favor and the motion passed. The new policy is attached to these minutes.

New Business

Article on e-Cigarettes – Anna Davis reported that a recent study of Maryland consumers found concentrations of metals in e-cigarette vapor, coming off the coils, aerosol and well (Metal Concentrations in e-Cigarette Liquid and Aerosol Samples: The Contribution of Metallic Coils, P. Olmedo, W. Goessler, S. Tanda, M. Grau-Perez, S. Jarmul, A. Aherrera, R. Chen, M. Hilpert, J.E. Cohen, A. Navas-Acien, A. Rule, Environmental Health Perspectives, February 2018. https://doi.org/10.1289/EHP2175). Lead is in high concentration, so this is another potential source of lead. Youth are particularly attracted to e-cigarettes. Jewel is a particular brand. The device is very insidious and looks like an ordinary flash drive. Kids can be vaping in school undetected. One can't tell the difference between Juell and a flash drive. Nicotine comes in very attractive flavors to kids and are sold in packages that look like candy box with flavors like Skittles, Reeses peanut butter cups. They are a real problem in schools. Although the manufacturer says this is not for children, e-cigarettes appear to be a gateway to getting kids hooked on nicotine. The FDA is looking into this now and has requested formal comments. No action is expected until August 2022. Greg Sileo is responsible for tobacco in Baltimore City and can bring a report on this. Barbara Moore asked to add this to the Commission's list for legislation next year. Paula Montgomery asked if there was any association with higher BLLs. Anna replied that this is one of the first studies to look at metal concentrations in e-cigarette liquid and aerosol. Barbara Moore stated it is unlikely that younger children, who are tested, would have access. Older children, who are potentially using, are not tested, so the impact on young people may not be seen. Anna Davis will send the article to Pet Grant to distribute to the Commission.

Article on Lead and Fertility - Pat McLaine briefly reviewed research findings published in May 2018 that found that national reductions in airborne lead between 1978 and 1988 in the US increased fertility rates but that higher levels of lead in topsoil decreased fertility rates in the 2000s. The article concludes that in areas with high lead levels in soil, lead may continue to impact fertility in the US and in other countries. This is a population measure of health. (Toxic Truth: Lead and Fertility, K. Clay, M. Portnykh, E. Severnini, National Bureau of Economic Research Working Paper 24607, Issued May 2018. DOI: 10.3386/w24607)

July Meeting – the next meeting is scheduled for July 5. A number of Commissioners will not be able to make the meeting due to prior plans for the 4th of July holiday. A motion was made by Paula Montgomery to cancel the July 5, 2018 Commission meeting and meet next on August 2, 2018. The motion was seconded by Barbara Moore. All commissioners were in favor or cancelling the July 5 meeting – motion passed.

Guest from New Jersey – Camille Burke introduced Mark Petrillo, REHS, Lead Inspector/Risk Assessor, Somerset County Health Department who is visiting and shadowing with the Lead Program at the Baltimore City Health Department this week. He indicated that he was working on lead program in the 1980s and was surprised to find that work is still on-going. He has been a health inspector for 30 years and hopes to be able to make a difference in New Jersey. New Jersey has home rule with more than 200 jurisdictions. His county only oversees 7 of 21 jurisdictions. NJ lowered the BLL for case management action to 5µg/dL. In larger jurisdictions, e.g. Newark, there has been an increase in cases. Mark Petrillo asked to visit Baltimore to see how work is done here. He indicated that stricter requirements are needed for landlords in NJ. Certified contractors charge much more money. They have identified problems with older bathtubs; removing and replacing a tub requires hiring a lead contractor, with a minimum of $10,000 cost.

The Quarterly Report from Baltimore City HUD Grant Program was not available.

Future Meeting Dates
The next Lead Commission Meeting is scheduled for Thursday, August 2nd, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment – Paula Montgomery reported that MDE went to the Maryland Association of Home Remodelers Expo and made a presentation on Maryland lead laws to agencies that receive HUD funding for rental properties (Housing Authorities, Project-based recipients). The presentation was very well received and Paula Montgomery has received numerous phone calls for follow-up. There is still a misconception that if the property meets the standard requirements of HUD housing that the project does not need to meet Maryland requirement. Housing Authorities outside Baltimore City have many properties built 1950-1978, particularly the Housing Choice Voucher Program. MDE has reached out to HUD regarding 24CFR Part 35 that requires Federally-assisted properties to meet all local and state requirements. Many HUD properties have not been tested to Maryland standards. Because HUD does not require their properties to have dust sampling at tenant turnover, properties in Maryland that follow the HQS standards and are not dust sampled are not in compliance with Maryland law. MDE has informed HUD counsel and will be following up. Paula Montgomery indicated she would be happy to share MDE's letter to HUD at a later meeting. She indicated that Baltimore City is a leader in having properties in compliance with the lead standard. She indicated that MDE has been working with HUD for many years on this issue and is a little concerned about the absence of dust testing continuing.

Maryland Department of Health – nothing to report

Maryland Department of Housing and Community Development – not present

Baltimore City Health Department – Camille Burke reported that blood lead testing efforts continue. BCHD has a great partnership with Esperanza Center and is doing in-house testing of children one day per month. The Center targets the Hispanic community and BCHD provides education to the whole family using Spanish-speaking staff.

A number of individuals with Section 8 Vouchers did not renew their voucher and had to pick up and leave. Also some homes are in foreclosure. Section 8 gave families extension to renew.

Greg Sileo said the City is working hard to engage MCOs and FQHCs. The Chief Medical Officer is assisting. Amerigroup has been very helpful and has prepared lists of kids who have not been tested. They will also be able to identify providers with high and low rates of testing. BCHD is planning a campaign to outreach to families who have not been tested and to outreach to PCPs who are and are not doing a good job of screening. They will put together a toolkit for care providers. Point of care testing should also help.

Baltimore City Housing and Community Development – Bill Peach stated that the Housing Authority of Baltimore City was providing MDE's notice of Tenant Rights and the EPA pamphlet to tenants. Paula Montgomery stated she would send the most recent Notice of Tenant Rights to Mr. Peach and indicated that notification can be done electronically. Ludeen Green noted that EPA has updated their brochure on lead in water.

Bill Peach also indicated that the HOA is amending leases for tenants in Baltimore City.

Office of Child Care – nothing to report

Maryland Insurance Administration – nothing to report

Public Comment – Ludeen Green stated that GHHI looks at other states that have chosen to address lead exposure in kids sooner (at 5µg/dL) rather than later (at 10µg/dL) and New Jersey is one of those forward-thinking states. June is Healthy Homes Month. GHHI plans to offer a series of podcasts to reach out to providers, tenants and other groups. Some may be focused on contractors. Ludeen Green indicated that GHHI has nothing to discuss legislatively at this time.

Adjournment
A motion was made by Anna Davis to adjourn the meeting, seconded by Susan Kleinhammer. The motion was approved unanimously and the meeting was adjourned at 10:53 AM.

RULES OF PRACTICE AND PROCEDURES OF THE LEAD POISONING PREVENTION COMMISSION:

Recording of Meetings

Any member of the public, including representatives of the media, may record discussions of the Commission at an open session by means of a tape recorder or any recording device, provided that the device does not create a disturbance to the members of the Commission or to other persons at the open session.

i. The individual recording shall inform the Commission Chairperson prior to recording.

ii. Recording equipment may not be placed or operated in any manner that blocks the view of people who are attending the open session.

iii. The Chairperson may designate a location for all recording to be performed, as long as the location is reasonable for recording to occur.

iv. The Chairperson may restrict the movement of a person who is using a recording device, camera broadcasting or television equipment if such restriction is necessary to maintain orderly conduct of the meeting.

Adopted June 7, 2018

Opinion of Jeanny Pope, Assistant Attorney General,
Office of the Attorney General, Maryland Department of the Environment

The Commission may and shall set forth rules governing the recording (by any media) of its meetings, but the rules must be reasonable and not prohibit the recording in and of itself.

DISCUSSION:

From reviewing state laws on the Open Meetings Act, as well as opinions of the Open Meetings Compliance Board (specifically, 8 OMCB 128), a few points are clear:

1) A person may not be prohibited from recording or videotaping an open proceeding.
2) The board may set forth rules that reasonably restrict such recordings. Examples of a reasonable restriction may be requiring check-in/notification from those wishing to record meetings or designating specific areas of the room from which to record if necessary to minimize disruption.
3) Those attending an open meeting have no right of protection against the "lens of an observer's camera," or, by extension, an observer's recording device.

As per §10-507(b) of the State government article:

"A public body shall adopt and enforce reasonable rules regarding the conduct of persons attending its meetings and the videotaping, televising, photographing, broadcasting, or recording of its meetings."

According to the Attorney General's Open Meetings Act Manual:

"The Compliance Board has found that a prohibition on videotaping is not a "reasonable rule" and that public bodies violate the Act when they refuse to permit videotaping. 3 OMCB Opinions 356 (2003)."

"The Compliance Board deems a rule on the use of video recording equipment "reasonable" if the rule "(1) is needed to protect the legitimate rights of others at the meeting; and (2) does so by means that are consistent with the goals of the Act." 5 OMCB Opinions 22, 24-25 (2006). An example of a rule found "reasonable," if adequately posted beforehand, is a requirement that people wishing to videotape a meeting check in with staff before the meeting so that staff may tell them where they may stand. Id. Public bodies must afford members of the public and reporters access to an open meeting on equal terms. Id., citing 2 OMCB Opinions 67 (1999)."

It is clear that recordings/videotapings themselves may not be prohibited from an open meeting, and in the absence of a rule requiring advanced notice of intent to record, may be legally done at any time. If recording without knowledge is of concern, we would suggest that a set of rules be created that require check-in/notification prior to the start of the meeting, as well as an announcement that recording will occur before the meeting begins.

The Open Meetings Compliance Board (OMCB) has set forth some model rules, including those for recording. Though not necessary to use word for word, you may wish to incorporate some of this language and tailor/add additional language to address what we've already discussed. Please see model rules below (relevant section bolded). I have also added beneath the model rules an example from the rules of the Charles County Planning Commission:

OMCB MODEL RULES:

1.01. Public Attendance.

(a) At any open session of the [name of public body], the general public is invited to attend and observe.

(b) Except in instances when the [public body] expressly invites public testimony, questions, comments, or other forms of public participation, or when public participation is otherwise authorized by law, no member of the public attending an open session may participate in the session.

1.02. Disruptive Conduct.

(a) A person attending an open session of the [public body] may not engage in any conduct, including visual demonstrations such as the waving of placards, signs, or banners, that disrupts the session or that interferes with the right of members of the public to attend and observe the session.

(b)(1) The presiding officer may order any person who has persisted in conduct prohibited by subsection (a) of this section or who violates any other regulation concerning the conduct of the open session to be removed from the session and may request police assistance to restore order. (2) The presiding officer may recess the session while order is restored.

1.03. Recording, Photographing, and Broadcasting of Open Session

(a) A member of the public, including any representative of the news media, may record discussions of the [public body] at an open session by means of a tape recorder or any other recording device if the device does not create an excessive noise that disturbs members of the [public body] or other persons attending the session.

(b) A member of the public, including any representative of the news media, may photograph or videotape the proceedings of the [public body] at an open session by means of any type of camera if the camera: (1) Is operated without excessively bright artificial light that disturbs members of the [public body] or other persons attending the session; and (2) Does not create an excessive noise that disturbs members of the [public body] or other persons attending the session.

(c) A representative of the news media may broadcast or televise the proceedings of the [public body] at an open session if the equipment used: (1) Is operated without excessively bright artificial light that disturbs members of the [public body] or other

persons attending the session; and (2) Does not create an excessive noise that disturbs members of the [public body] or other persons attending the session.

(d) The presiding officer may restrict the movement of a person who is using a recording device, camera, or broadcasting or television equipment if such restriction is necessary to maintain the orderly conduct of the session.

1.04. Recording Not Part of Record. A recording of an open session made by a member of the public, or any transcript derived form such a recording, may not be deemed a part of the record of any proceeding of the [public body].

FROM THE RULES OF PRACTICE AND PROCEDURES OF THE CHARLES COUNTY PLANNING COMMISSION:

"Recording of Meetings:

Any member of the public, including representatives of the media, may record discussions of the Commission at an open session by means of a tape recorder or any recording device, provided that the device does not create a disturbance to the members of the Commission or to other persons at the open session.

i. Recording equipment cannot be placed past the front row of the hearing room and may not be placed or operated in any manner that blocks the view of people who are attending the open session.

ii. The Chairperson may designate a location for all recording to be performed, as long as the location is reasonable for recording to occur.

iii. The Chairperson may restrict the movement of a person who is using a recording device, camera broadcasting or television equipment if such restriction is necessary to maintain orderly conduct of the meeting."

A Section 508–conformant HTML version of this article is available at https://doi.org/10.1289/EHP2175.

Metal Concentrations in e-Cigarette Liquid and Aerosol Samples: The Contribution of Metallic Coils

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BACKGROUND: Electronic cigarettes (e-cigarettes) generate an aerosol by heating a solution (e-liquid) with a metallic coil. Whether metals are transferred from the coil to the aerosol is unknown.

OBJECTIVE: Our goal was to investigate the transfer of metals from the heating coil to the e-liquid in the e-cigarette tank and the generated aerosol.

METHODS: We sampled 56 e-cigarette devices from daily e-cigarette users and obtained samples from the refilling dispenser, aerosol, and remaining e-liquid in the tank. Aerosol liquid was collected via deposition of aerosol droplets in a series of conical pipette tips. Metals were reported as mass fractions (μg/kg) in liquids and converted to mass concentrations (mg/m^3) for aerosols.

RESULTS: Median metal concentrations (μg/kg) were higher in samples from the aerosol and tank vs. the dispenser (all $p < 0.001$): 16.3 and 31.2 vs. 10.9 for Al; 8.38 and 55.4 vs. <0.5 for Cr; 68.4 and 233 vs. 2.03 for Ni; 14.8 and 40.2 vs. 0.476 for Pb; and 515 and 426 vs. 13.1 for Zn. Mn, Fe, Cu, Sb, and Sn were detectable in most samples. Cd was detected in 0.0, 30.4, and 55.1% of the dispenser, aerosol, and tank samples respectively. Arsenic was detected in 10.7% of dispenser samples (median 26.7 μg/kg) and these concentrations were similar in aerosol and tank samples. Aerosol mass concentrations (mg/m^3) for the detected metals spanned several orders of magnitude and exceeded current health-based limits in close to 50% or more of the samples for Cr, Mn, Ni, and Pb.

CONCLUSIONS: Our findings indicate that e-cigarettes are a potential source of exposure to toxic metals (Cr, Ni, and Pb), and to metals that are toxic when inhaled (Mn and Zn). Markedly higher concentrations in the aerosol and tank samples versus the dispenser demonstrate that coil contact induced e-liquid contamination. https://doi.org/10.1289/EHP2175

Introduction

The use of electronic cigarettes (e-cigarettes) is increasing despite uncertainties about their toxicity and health effects (Giovenco et al. 2015; McCarthy 2015; Schoenborn and Gindi 2015; McQueen et al. 2015; Orr and Asal 2014; Ambrose et al. 2014). e-Cigarettes generate nicotine and non-nicotine containing aerosols by resistance heating a solution (e-liquid) through a metallic coil (Williams et al. 2013; Fuoco et al. 2014). Commonly used coils include Kanthal, made of iron, chromium, and aluminum, and Nichrome, made of nickel and chromium (Farsalinos et al. 2015). Other metals such as tin are used in the joints (Williams et al. 2015). A few studies have detected toxic metals such as chromium, nickel, and lead in e-liquid and in the aerosol produced by e-cigarettes (Williams et al. 2013; Saffari et al. 2014; Goniewicz et al. 2014; Hess et al., 2017). Concern for metal exposure is derived from the serious health effects of metals, including neurotoxicity (Garza et al. 2006) and cardiovascular disease (Navas-Acien et al. 2007) for lead, and respiratory disease and lung cancer for chromium (chromium VI) and nickel (IARC 2012a, 2012b; Jaishankar et al. 2014).

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Studies on metals in e-cigarettes have focused on cigalikes (Hess et al., 2017; Mikheev et al. 2016; Williams et al. 2013), which are first generation devices with the shape of conventional tobacco cigarettes. These cigalikes contain a disposable cartomizer that contains the coil and comes preloaded with e-liquid. Daily e-cigarette users, however, often utilize reusable modified devices, known as mods or tank-style devices, which come with a box or cylindrical-shaped battery and a mouthpiece with a tank to refill the e-liquid from a bottle dispenser (Cooper et al. 2016). Tank-style devices are highly diverse in voltage and coil composition, as they can be assembled and manipulated by the user. Direct sampling from e-cigarette consumers rather than purchasing e-cigarettes from a store or company is thus needed to assess typically used devices. Previous research is also lacking in comparisons between metal concentrations in e-liquid from the refilling dispenser (before contact with the device and the heating coil), e-liquid in the device itself (in contact with the heating coil), and the generated aerosol (inhaled by the user).

The goal of this study was to evaluate the potential contribution of the heating coil to metal exposure in e-cigarette users by analyzing a 15-metal panel in samples from different types of tank-style e-cigarettes collected from daily e-cigarette consumers from Maryland. The samples included e-liquid from the refilling dispenser, the tank (after the device was used), and the generated aerosol. We hypothesized higher metal concentrations in samples that have been in contact with the heating coil (aerosol and tank) compared with samples that have never been in contact with the coil (refilling dispenser). We also compared metal concentrations by the type of coil, device voltage, and frequency of coil change, as reported by the user.

Methods

Study Population and Data Collection

We sampled tank-style devices from daily e-cigarette users who were recruited as part of a study to evaluate e-cigarette use in

Maryland (Aherrera et al. 2017). The study recruited 58 participants using tank-style devices through vaping conventions and flyers posted in e-cigarette shops. Participants were instructed to bring their regular e-cigarette device and refilling dispenser on the day of the interview. One participant not bringing the e-cigarette device and another not bringing the refilling dispenser were excluded from the analyses, leaving 56 participants for this study. The study was approved by the institutional review board of the Johns Hopkins Bloomberg School of Public Health. All participants provided informed consent.

Trained field workers administered a standardized questionnaire recording information on e-cigarette brand, voltage used (estimated in volts), type of coil (self-reported by the participants and categorized as Kanthal, other/combination, or unknown), and frequency of coil change (self-reported by the participant and categorized as ≤ 2 and >2 times per month). For each participant, we collected three types of samples from their device and dispenser. First, we pipetted a minimum of 0.25 mL of the refilling e-cigarette liquid (no contact with the coil) directly from the dispenser into a 1.5-mL centrifuge tube. Second, we collected 0.2–0.5 mL of the aerosol generated by the e-cigarette device using the methodology described in Olmedo et al. (2016). Briefly, a peristaltic pump placed inside a fume hood puffed the e-cigarette and the generated aerosol was collected in a 1.5-mL centrifuge tube via deposition in a series of conical pipette tips and plastic tubing (1 L/min, 4 s per puff and 30-s interpuff time). Based on these parameters, the mean puff volume of e-cigarettes in our study was 66.67 mL. The collected aerosol sample was then ready for analysis using methods similar to refilling liquid from the dispenser, allowing a direct comparison between both samples. Third, a minimum of 0.25 mL of the e-liquid remaining in the mouthpiece tank after puffing the e-cigarette with the peristaltic pump was pipetted into a third centrifuge tube. We could not obtain a sample from the tanks of seven devices, leaving 49 samples for those analyses. All samples were stored at room temperature.

Metal Analyses

All e-liquid samples were shipped to the Institute of Chemistry, University of Graz (Graz, Austria) for metal analyses. External calibrations in the range of 0.01–10 μg/L were prepared in ultrapure water (18.2 MΩ cm; Milli-Q, Merck Millipore; Merck KGaA, Darmstadt, Germany) from aluminum (Al), antimony (Sb), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), nickel (Ni), tin (Sn), titanium (Ti), tungsten (W), uranium (U), and zinc (Zn) single-element standards [CertiPUR® single-element standard solutions for inductively coupled plasma–mass spectrometry (ICP-MS); Merck KGaA, Darmstadt, Germany]. An aliquot of each sample (typically 0.05–0.2 g depending on the available total amount) was diluted with 5 mL ultrapure water. A solution of propylene glycol (High purity grade, Amresco; Solon, OH) and glycerol (Ultra pure; ICN Biochemicals, Aurora, OH) (70% propylene glycol, 30% glycerol) was analyzed ($n=6$) as blank e-liquid to study possible matrix effects. Three blank e-liquid samples were also passed through the conical pipette tips and plastic tubing using the peristaltic pump in the lab to account for potential background air contamination as well as contamination within the sampling device (aerosol blanks). Metal levels in e-liquid and aerosol blanks were in general under or close to the limits of detection (LODs), and the median concentrations are shown in Table S1. The median of the three aerosol blanks was used to correct aerosol samples, whereas the median of the six e-liquid blanks was used to correct the dispenser and tank samples.

The multielement measurements were performed on an Agilent 8800 triple quadrupole ICP-MS (ICPQQQMS) (Agilent Technologies, Santa Clara, CA). The instrument was equipped with a micro-mist nebulizer (Glass Expansion, Melbourne, Australia), a Scott double pass spray chamber, a 2.5-mm internal diameter quartz torch, a sampler cone made from copper with a nickel tip and a skimmer cone made from nickel. The instrument was tuned for suitable sensitivity and robustness with cerium (Ce) oxide ratios <1.0% ($^{156}CeO^{+}/^{140}Ce^{+}$) and <2.0% doubly charged ions ($^{70}Ce^{+}/^{140}Ce^{++}$) in no-gas mode. Oxide ratios and doubly charged ratios were lower in collision mode respectively. Different tune modes were used for the quantification of the different elements. Both in no-gas mode and in helium (He) mode (4.0 mL/min He), the ICPQQQMS was operated in single-quadrupole mode.

Quality Assurance. To ensure accuracy of the results, we used an internal standard and a reference standard. The multielement internal standard consisted of a solution containing 200 μg/L of each of the following: beryllium (Be), germanium (Ge), indium (In), and lutetium (Lu) and was added online to the samples prior to the nebulizer of the ICP-MS via a T-piece to compensate for instrumental instabilities and possible matrix effects. The solutions were prepared either in 50-mL or 15-mL polypropylene (PP) flasks (Cellstar®; Greiner Bio-One GmbH, Kremsmünster, Austria). In addition to the use of an internal standard, we reanalyzed a reference standard [Reference Material SRM 1640a; NIST SRM® 1640a—Trace Elements in Natural Water; National Institute of Standards and Technology (NIST), Gaithersburg, MD] and two blanks after every 30 samples. All elements of the reference standard were found within 5% of the NIST-certified concentrations. Altogether we analyzed the standard 12 times, with a mean recovery of 98% ±2% standard deviation, suggesting a very stable measurement. There was not enough sample volume left for replicate analysis; nevertheless, our quality assurance procedures insured accuracy of the results based on the NIST results. In a previous study (Hess et al., 2017), we conducted an interlaboratory comparison of metal concentrations in e-liquid samples between the laboratory in Austria and the Trace Metal Laboratory at Johns Hopkins University and found high comparability between laboratories (intraclass correlation coefficient for all metals of 0.99 or higher).

We reported metal concentrations in a weight/weight basis [micrograms per kilogram (μg/kg)] due to the difficulty of measuring volumes of thick and sticky e-liquid samples. LODs in μg/kg were 5.0 for Al, 1.0 for As, 0.1 for Cd, 0.5 for Cr, 1.0 for Cu, 5.0 for Fe, 1.0 for Mn, 1.0 for Ni, 0.2 for Pb, 0.1 for Sb, 0.1 for Sn, 5.0 for Ti, 0.1 for U, 0.1 for W, and 1.0 for Zn. Concentrations under the LOD were replaced with the LOD divided by the square root of 2 for analysis.

For comparison with aerosol standards and health-based exposure limits, the collected aerosol was assumed to be equivalent to daily consumption, and metal concentrations assumed to represent daily values. Concentrations were converted from the mass fraction θ_i (μg/kg) of metal i in the collected liquid as reported by the lab into an air concentration C_i (mg/m³) using Equation 1.

$$C_i = \theta_i \times \frac{m_{tot}}{V_{air}} = \theta_i \times \frac{m_{tot}}{Q \times t \times Number\ of\ puffs} \quad [1]$$

where m_{tot} is the total weight of the sample collected (mg), and V_{air} is the volume of air required to obtain each sample (m³). V_{air} is calculated by multiplying the puffing flow rate Q (1 L/min) times the puffing duration t (4 s/puff) and the number of puffs required to collect the desired volume of aerosol (between 30 and 50 puffs). This number of puffs is an underestimation of a daily average based on our own self-reported data, and others (Aherrera et al. 2017; Robinson et al. 2015). This topography was used to derive a conversion factor of 6.67×10^{-5} m^3/puff to convert from mg/m^3 to mg/puff.

We report air concentrations for Ni, Cr, Pb, Mn, and As because these metals have at least one inhalation health-based limit. We compared our Cr air concentrations to more than one health-based limit because limits depend on the form of the compound, which was not determined in our samples, and thus we cannot be sure which applies. We have used the most protective limits found for each metal. Arsenic is not included in our tables because it was found in only 10/56 aerosol samples. Because of the toxicity of As and the fact that there is no clear source or reason for it to be present in e-liquid, we have reported the most relevant As data in the manuscript text. We estimated m_{tot} by weighing the final remaining sample after analyses, adding the mass used for analysis, and subtracting the mean weight of the vial. Maximum propagation of error (σ) was calculated as 30% using Equation 2:

$$\sigma C_i = \sqrt{\left(\frac{\sigma 0}{0}\right)^2 + \left(\frac{\sigma m_{tot}}{m_{tot}}\right)^2 + \left(\frac{\sigma V_{air}}{V_{air}}\right)^2} \qquad [2]$$

Statistical Analyses

Medians and interquartile ranges (IQRs) were calculated for each sample type. We graphically described metal concentrations using box plots stratified by sample type. We also described the correlation among metals within and between each sample type using Spearman correlation coefficients. To test whether metal concentrations were higher in samples in contact with the heating coil, mean differences of log-transformed metal concentrations in the aerosol and tank samples were compared to that of the corresponding dispenser sample. This was carried out for each metal by using paired t-test and by estimating geometric mean ratios (95% confidence interval), where the mean difference (equivalent to the β coefficient) and corresponding 95% CI are both exponentiated. We further compared metal concentrations by device voltage tertiles, coil materials, and coil change frequency using the test of Kruskal-Wallis. We could not compare metal levels by device brand because a total of 20 different brands were reported by the participants, ranging from 1 up to 9 (median 1) participants per brand. We used R (version 3.3.0; R Core Team) to perform the statistical and graphical analysis of the data. The significance level was set at 0.05 and all tests were two-sided.

Results

Metal Detection

Of the 15 elements analyzed, with results included in Table 1, four (As, Ti, U, and W) were excluded from further analyses shown in Tables 2–8 due to low detection in a majority of the samples. As, Ti, and U were detected in less than 20% of all sample types and W was detected in less than 20% of dispenser and aerosol samples. For the other 11 metals, the percentages of samples with detectable metal concentrations ranged from 0.0% for Cd to 92.9% for Zn in the dispenser samples; from 30.4% for Cd to 100% for Sn in the aerosol samples; and from 55.1% for Cd to 100% for Cr, Cu, Fe, Ni, Pb, Sn, and Zn in the tank samples.

Metal Concentrations

Compared with e-liquid from the dispenser, metal concentrations were higher in aerosol samples, and markedly higher in tank samples for most metals (Figure 1). For Al, Cr, and Ni, metals known to be part of the coil alloys, median concentrations increased from the dispenser sample to the aerosol and tank samples from 10.9 to 16.3, and 31.2 μg/kg respectively for Al, from <0.5 to 8.38, and 55.4 μg/kg respectively for Cr, and from 2.03 to 68.4, and 233 μg/kg respectively for Ni (Table 2). Metals for which the median (interquartile range) concentration increased between the dispenser and aerosol, but was similar between aerosol and tank samples, included Pb [from 0.476 (0.243, 1.05) to 14.8 (3.10, 37.1) and 40.2 (13.6, 189) μg/kg, respectively] and Zn [from 13.1 (6.74, 23.0) to 515 (228, 809) and 426 (152, 1,540) μg/kg, respectively]. In contrast, Cu, Mn, Sb, and Sn showed moderate increases in the aerosol samples, but much larger increases in the tank samples compared with dispenser samples. Cd was below the LOD in all dispenser samples and in 70% of aerosol samples, but was detected in 55% of tank samples, with a median value of 0.126 μg/kg (IQR <0.1, 0.267) μg/kg. The median (IQR) concentrations among 22 samples with detectable arsenic were 26.7 (12.0–45.6) μg/kg for the dispenser ($n=6$), 12.9 (9.33–55.2) μg/kg for the aerosol ($n=10$), and 28.5 (12.6–47.6) μg/kg for the tank samples ($n=6$) (data not shown).

In paired sample analyses within devices, the increases in metal concentrations in the aerosol and tank samples compared with the original e-liquid from the dispenser were all statistically significant (all $p<0.008$), except for Fe in the aerosol (Table 3). The highest increases were for Zn (ratio 29.5), Pb (ratio 25.4), Ni (ratio 8.43), and Cr (6.78) in the aerosol, and for Pb (ratio 116),

Table 1. Number (percentage) of e-cigarette samples with detectable metal concentrations in each sample type.

Metal	LOD (μg/kg)	Dispenser ($n=56$)	Aerosol ($n=56$)	Tank ($n=49$)
Al	5.0	45 (80.4)	55 (98.2)	48 (98.0)
As	1.0	6 (10.7)	10 (17.9)	6 (12.2)
Cd	0.1	0 (0.0)	17 (30.4)	27 (55.1)
Cr	0.5	26 (46.4)	36 (64.3)	49 (100)
Cu	1.0	32 (57.1)	46 (82.1)	49 (100)
Fe	5.0	44 (78.6)	33 (58.9)	49 (100)
Mn	1.0	30 (53.6)	36 (64.3)	48 (98.0)
Ni	1.0	31 (55.4)	48 (85.7)	49 (100)
Pb	0.2	45 (80.4)	53 (94.6)	49 (100)
Sb	0.1	17 (30.4)	34 (60.7)	35 (71.4)
Sn	0.1	49 (87.5)	56 (100)	49 (100)
Ti	5.0	1 (1.8)	1 (1.8)	4 (8.2)
U	0.1	3 (5.4)	0 (0.0)	3 (6.1)
W	0.1	4 (7.1)	8 (14.3)	21 (42.9)
Zn	1.0	52 (92.9)	53 (94.6)	49 (100)

Note: Al, aluminum; As, arsenic; Cd, cadmium; Cr, chromium; Cu, copper; Fe, iron; LOD, limit of detection; Mn, manganese; Ni, nickel; Pb, lead; Sb, antimony; Sn, tin; Ti, titanium; U, uranium; W, tungsten; Zn zinc.

Table 2. Median (interquartile range) and limit of detection of metal concentrations (μg/kg) in e-cigarette samples from the dispenser (no previous contact with the device), the aerosol, and the tank (in contact with the device).

Metal	Dispenser ($n=56$)	Aerosol ($n=56$)	Tank ($n=49$)
Al	10.9 (7.22–20.2)	16.3 (12.2–22.2)	31.2 (17.5–128)
Cd	<0.1 (<0.1, <0.1)	<0.1 (<0.1, 0.134)	0.126 (<0.1, 0.267)
Cr	<0.5 (<0.5–2.26)	8.38 (<0.5–43.9)	55.4 (17.4–217)
Cu	5.14 (<1.0–16.1)	15.1 (5.70–51.0)	148 (42.0–543)
Fe	26.9 (9.14–91.3)	21.7 (<0.5–236)	382 (127–1,360)
Mn	1.09 (<1.0–2.74)	2.42 (<1.0–9.56)	31.9 (13.0–93.9)
Ni	2.03 (<1.0–42.1)	68.4 (6.19–289)	233 (69.5–675)
Pb	0.476 (0.243–1.05)	14.8 (3.10–37.1)	40.2 (13.6–189)
Sb	<0.1 (<0.1–0.219)	0.553 (<0.1–1.93)	0.563 (<0.1–2.57)
Sn	1.33 (0.489–3.55)	5.65 (2.38–19.4)	20.3 (9.10–72.2)
Zn	13.1 (6.74–23.0)	515 (228–809)	426 (152–1,540)

Note: Metals with >50% detection in at least one sample type. The number next to the symbol < corresponds to the limit of detection for each specific metal. For some samples the median, the 25th percentile and/or the 75th percentile were below the limit of detection. Al, aluminum; Cd, cadmium; Cr, chromium; Cu, copper; Fe, iron; Mn, manganese; Ni, nickel; Pb, lead; Sb, antimony; Sn, tin; Zn zinc.

Table 3. Ratio (95% confidence interval) of metal concentrations in e-cigarette aerosol and tank samples compared with dispenser sample.

	Aerosol vs. Dispenser ($n = 56$)		Tank vs. Dispenser ($n = 49$)	
Metal	Ratio (95% CI)	p-Value	Ratio (95% CI)	p-Value
Al	1.73 (1.27, 2.36)	<0.001	3.79 (2.62, 5.50)	<0.001
Cd	1.60 (1.26, 2.04)	<0.001	2.30 (1.68, 3.15)	<0.001
Cr	6.78 (3.46, 13.3)	<0.001	70.7 (41.4, 121)	<0.001
Cu	3.30 (1.54, 7.07)	0.003	51.4 (24.8, 106)	<0.001
Fe	1.29 (0.69, 2.40)	0.41	17.6 (9.71, 31.9)	<0.001
Mn	1.93 (1.20, 3.09)	0.007	19.6 (12.1, 32.0)	<0.001
Ni	8.43 (3.17, 22.4)	<0.001	64.6 (27.2, 153)	<0.001
Pb	25.4 (14.0, 45.9)	<0.001	116 (64.0, 211)	<0.001
Sb	3.58 (2.26, 5.69)	<0.001	4.65 (2.81, 7.71)	<0.001
Sn	6.59 (4.16, 10.4)	<0.001	24.2 (14.3, 40.7)	<0.001
Zn	29.5 (17.4, 50.2)	<0.001	36.7 (21.4, 62.7)	<0.001

Note: The ratio of the geometric mean of metal concentrations in e-cigarette aerosol and tank samples compared with the dispenser was obtained by exponentiating the corresponding mean difference (95% confidence interval) in log-transformed metal concentrations. The p-values were obtained with a paired t-test. All tests were two-sided. Al, aluminum; Cd, cadmium; CI, confidence interval; Cr, chromium; Cu, copper; Fe, iron; Mn, manganese; Ni, nickel; Pb, lead; Sb, antimony; Sn, tin; Zn zinc.

Cr (ratio 70.7), Ni (ratio 64.6), Cu (51.4), and Zn (36.7) in the tank. Only Cd (ratio 2.30), Al (ratio 3.79), and Sb (ratio 4.65) displayed ratios below 10 in tank compared with dispenser samples.

Metal Correlations

Across metals, Spearman correlations in e-liquid from the dispenser were generally low (well below 0.40) except for Al and Mn ($r = 0.40$), Fe and Mn ($r = 0.49$), Sn and Zn ($r = 0.41$), Mn and Zn ($r = 0.43$), and Ni and Cu ($r = 0.69$) (see Figure S1); they were higher in aerosol samples, with three correlations being above 0.70 (Cr and Fe, Cr and Mn, and Fe and Mn) and 24 above 0.40 (Figure 2A); and they were markedly higher in tank samples with 23 correlations above 0.40 and 5 above 0.80 (Figure 2B). Within-metal correlations between the dispenser and aerosol samples were statistically significant for Fe, Mn, Sb, and Sn (ranging from 0.28 for Fe to 0.42 for Sb) (Table 4); between the dispenser and tank samples, they were statistically significant for Al, Mn, and Sb (ranging between 0.29 for Al and 0.39 for Mn); and between the aerosol and tank samples, they were all statistically significant, except for Cd and Cu, and ranged between 0.37 for Mn and 0.52 for Al. For As, among the detectable samples, the within-metal correlation was 0.84, 0.97, and 0.81 between the

Table 4. Within-metal Spearman correlations in e-cigarette samples.

	Dispenser vs. Aerosol ($n = 56$)		Dispenser vs. Tank ($n = 49$)		Aerosol vs. Tank ($n = 49$)	
Metal	Correlation	p-Value	Correlation	p-Value	Correlation	p-Value
Al	0.13	0.33	0.29	0.046	0.52	<0.001
Cd[a]	—	—	—	—	0.17	0.26
Cr	0.16	0.22	0.27	0.064	0.48	<0.001
Cu	−0.14	0.32	0.20	0.16	0.19	0.19
Fe	0.28	0.038	0.16	0.28	0.42	0.003
Mn	0.30	0.025	0.39	0.006	0.37	0.009
Ni	−0.22	0.11	0.04	0.79	0.43	0.002
Pb	0.23	0.095	0.23	0.11	0.43	0.002
Sb	0.42	0.001	0.34	0.016	0.44	0.002
Sn	0.38	0.004	0.25	0.081	0.46	0.001
Zn	0.25	0.064	0.18	0.22	0.45	0.001

Note: The p-values were obtained from the Spearman correlation coefficient test. —, no data; Al, aluminum; Cd, cadmium; Cr, chromium; Cu, copper; Fe, iron; Mn, manganese; Ni, nickel; Pb, lead; Sb, antimony; Sn, tin; Zn zinc.
[a]Cd was not detected in any of the dispenser samples; therefore, Dispenser vs. Aerosol and Dispenser vs. Tank correlations were not calculated.

Table 5. Median (interquartile range) metal concentrations (μg/kg) in samples from the dispenser, aerosol, and tank, by voltage tertile.

Sample	Voltage tertile (V)	n[a]	Al	Cr	Cu	Fe	Mn	Ni	Pb	Sn	Zn
Dispenser	<4.02	18	8.80 (4.32–16.6)	1.13 (<0.5–2.50)	2.04 (<1.0–17.6)	46.1 (14.4–64.5)	<1.0 (<1.0–1.48)	<1.0 (<1.0–18.1)	0.507 (0.238–1.16)	0.718 (0.460–3.09)	13.2 (8.49–24.1)
($n = 54$)	4.02–4.42	18	11.8 (7.37–25.2)	<0.5 (<0.5–0.87)	7.20 (4.48–34.0)	30.1 (9.90–115)	2.41 (<1.0–4.30)	9.86 (<1.0–65.8)	0.513 (0.345–1.11)	2.29 (0.852–5.13)	11.4 (5.62–26.1)
	>4.42	18	13.3 (9.12–16.3)	0.509 (<0.5–2.02)	2.87 (<1.0–11.7)	22.8 (11.6–73.2)	1.21 (<1.0–2.93)	1.83 (<1.0–53.7)	0.462 (0.134–0.754)	1.16 (0.394–2.99)	12.8 (6.82–14.9)
	p-Value		0.50	0.21	0.19	0.71	0.19	0.18	0.60	0.36	0.79
Aerosol	<4.02	18	15.5 (12.4–17.1)	<0.5 (<0.5–40.4)	15.1 (9.29–51.0)	<5.0 (<5.0–164)	0.869 (<1.0–7.99)	12.5 (6.24–270)	14.0 (2.49–38.5)	4.86 (2.15–20.9)	549 (234–1,090)
($n = 54$)	4.02–4.42	18	18.5 (13.3–26.5)	19.7 (4.18–36.9)	13.8 (1.41–28.1)	59.3 (<5.0–467.4)	2.71 (<1.0–5.527)	101 (8.88–284)	13.0 (3.41–28.3)	7.22 (2.20–19.7)	483 (384–681)
	>4.42	18	16.4 (11.4–28.2)	24.2 (0.972–58.0)	38.1 (4.87–75.3)	58.5 (14.5–213)	5.92 (<1.0–17.3)	109 (12.5–299)	26.6 (4.97–72.2)	5.49 (3.85–16.3)	443 (206–791)
	p-Value		0.61	0.18	0.30	0.23	0.37	0.94	0.41	0.96	0.75
Tank	<4.00	14	25.7 (17.5–38.5)	23.4 (8.43–149)	168 (57.7–3,375)	230 (53.8–1,030)	20.1 (5.86–41.3)	297 (56.5–664)	49.2 (20.5–251)	14.5 (12.1–49.8)	679 (264–1,560)
($n = 47$)	4.00–4.40	16	62.7 (32.9–136)	165 (51.9–377)	128 (55.7–412)	1,080 (333–2,970)	61.0 (32.3–262)	448 (116–4,250)	42.8 (31.6–192)	24.3 (18.7–122)	413 (166–1,190)
	>4.40	17	19.2 (13.6–32.9)	21.7 (9.73–152)	67.9 (30.9–479)	218 (70.4–1,400)	23.2 (7.73–41.1)	105 (49.6–302)	17.7 (11.7–77.8)	10.2 (7.45–27.6)	201 (102–537)
	p-Value		0.04	0.07	0.46	0.04	0.03	0.05	0.20	0.08	0.37

Note: The p-values were obtained from Kruskal-Wallis tests. All tests were two-sided. Al, aluminum; Cr, chromium; Cu, copper; Fe, iron; Mn, manganese; Ni, nickel; Pb, lead; Sn, tin; Zn zinc.
[a]Two participants did not report the voltage of their devices and were not included in this analysis.

Table 6. Median (interquartile range) metal concentrations (µg/kg) in samples from the dispenser, aerosol, and tank, by coil material.

Sample	Coil Category	n	Al	Cr	Cu	Fe	Mn	Ni	Pb	Sn	Zn
Dispenser	Kanthal	29	10.0 (<5.0–18.9)	<0.5 (<0.5–1.71)	6.63 (<1.0–20.9)	33.5 (14.4–79.7)	1.28 (<1.0–2.50)	1.99 (<1.0–67.7)	0.481 (0.245–0.978)	2.30 (0.705–3.79)	13.7 (8.57–26.9)
($n = 56$)	Other/Combination	13	13.4 (12.2–26.3)	<0.5 (<0.5–2.57)	<1.0 (<1.0–6.09)	25.3 (7.93–96.4)	1.14 (<1.0–4.01)	<1.0 (<1.0–4.37)	0.319 (<0.2–1.18)	0.555 (0.277–2.16)	8.24 (4.68–14.0)
	Unknown	14	9.25 (8.08–15.0)	<0.5 (<0.5–2.15)	6.30 (<1.0–21.0)	13.4 (<5.0–88.6)	<1.0 (<1.0–3.64)	9.34 (<1.0–41.0)	0.462 (0.352–0.996)	1.33 (0.427–3.40)	13.1 (12.2–20.7)
	p-Value		0.33	0.97	0.29	0.77	0.97	0.27	0.92	0.24	0.30
Aerosol	Kanthal	29	16.2 (12.4–20.3)	15.3 (0.520–46.4)	15.2 (8.63–58.4)	38.6 (<5.0–507)	3.43 (<1.0–9.74)	122 (7.72–268)	20.4 (7.38–34.8)	6.29 (4.01–19.1)	564 (355–723)
($n = 56$)	Other/Combination	13	17.2 (11.4–20.8)	3.74 (<0.5–43.8)	21.2 (3.15–164)	28.9 (<5.0–200)	1.89 (<1.0–10.8)	57.5 (6.18–411)	3.86 (2.37–218)	5.63 (2.75–23.3)	422 (125–668)
	Unknown	14	16.1 (12.1–25.8)	<0.5 (<0.5–25.4)	12.7 (6.60–24.0)	8.60 (<5.0–125)	1.35 (<1.0–4.69)	36.7 (6.11–148)	6.89 (4.89–18.2)	3.18 (1.97–12.3)	652 (269–848)
	p-Value		0.99	0.30	0.65	0.66	0.45	0.57	0.59	0.35	0.49
Tank	Kanthal	25	29.6 (17.5–52.8)	60.3 (17.4–217)	107 (42.0–298)	333 (174–1,360)	31.9 (8.27–86.1)	147 (39.7–467)	33.3 (13.2–77.8)	19.4 (10.2–24.7)	279 (126–449)
($n = 49$)	Other/Combination	11	27.7 (14.8–157)	21.5 (12.1–469)	61.5 (28.7–494)	251 (108–2,110)	26.6 (11.2–196)	302 (98.0–877)	23.4 (12.7–188)	9.10 (7.20–40.0)	416 (127–1,470)
	Unknown	13	35.1 (19.4–168)	69.5 (28.4–177)	1,410 (80.3–5,150)	707 (102–1,350)	41.1 (14.0–93.9)	397 (158–638)	189 (40.2–355)	63.0 (26.7–104)	1,550 (537–4,080)
	p-Value		0.80	0.72	0.023	0.91	0.82	0.32	0.13	0.071	0.083

Note: The p-values were obtained from Kruskal-Wallis tests. All tests were two-sided. Al, aluminum; Cr, chromium; Cu, copper; Fe, iron; Mn, manganese; Ni, nickel; Pb, lead; Sn, tin; Zn zinc.

Table 7. Median (interquartile range) metal concentrations (µg/kg) in samples from the dispenser, aerosol, and tank, by coil change frequency.

Sample	Coil change	n^a	Al	Cr	Cu	Fe	Mn	Ni	Pb	Sn	Zn
Dispenser	≤2 times per month	32	11.9 (6.90–19.2)	0.705 (<0.5–2.26)	6.83 (<1.0–19.7)	29.4 (<5.0–77.5)	1.16 (<1.0–2.74)	5.04 (<1.0–41.5)	0.422 (0.202–0.897)	1.12 (0.489–3.84)	14.0 (8.91–36.9)
($n = 55$)	>2 times per month	23	10.2 (7.29–21.9)	<0.5 (<0.5–1.13)	<1.0 (<1.0–8.34)	26.6 (10.1–91.9)	1.05 (<1.0–2.53)	1.06 (<1.0–28.7)	0.482 (0.258–1.03)	1.37 (0.485–2.55)	10.4 (5.39–13.8)
	p-Value		0.86	0.15	0.16	0.97	0.99	0.54	0.52	0.73	0.088
Aerosol	≤2 times per month	32	15.4 (11.6–17.2)	0.949 (<0.5–36.2)	14.6 (5.70–53.1)	15.2 (<5.0–107)	1.27 (<1.0–3.58)	68.4 (6.32–252)	14.4 (3.06–46.4)	4.99 (2.22–14.8)	470 (227–809)
($n = 55$)	>2 times per month	23	20.3 (15.0–33.8)	21.5 (2.13–84.4)	21.2 (8.79–48.1)	136 (<5.0–374)	6.02 (2.40–21.2)	138 (9.27–376)	16.5 (3.23–32.3)	6.70 (3.87–24.0)	591 (292–831)
	p-Value		0.009	0.038	0.90	0.30	0.015	0.40	0.95	0.28	0.63
Tank	≤2 times per month	30	28.6 (14.0–49.8)	46.6 (17.8–154)	185 (39.0–1,210)	303 (125–1,330)	26.5 (8.55–92.0)	186 (44.2–636)	40.8 (15.5–204)	20.1 (7.52–81.6)	493 (176–1,640)
($n = 49$)	>2 times per month	19	35.1 (23.5–148)	132 (18.6–386)	107 (58.3–430)	565 (204–2,600)	33.5 (16.6–160)	329 (114–877)	40.2 (13.0–170)	20.3 (14.3–33.6)	302 (93.5–1,360)
	p-Value		0.081	0.29	0.84	0.33	0.38	0.26	0.84	0.59	0.26

Note: The p-values were obtained from Kruskal-Wallis tests. All tests were two-sided. Al, aluminum; Cr, chromium; Cu, copper; Fe, iron; Mn, manganese; Ni, nickel; Pb, lead; Sn, tin; Zn zinc.
[a]One participant did not report the coil change frequency and, also, the tank sample could not be obtained from his/her device.

Table 8. Median (range) of daily metal concentrations (mg/m^3) in collected aerosol samples with regulatory and health-based limits for Ni, Cr, Pb, and Mn.

Value	Ni	Cr	Pb	Mn
Median	4.44×10^{-4}	8.46×10^{-5}	1.06×10^{-4}	1.97×10^{-5}
Range	(4.35×10^{-6} to 1.12×10^{-1})	(7.97×10^{-7} to 2.95×10^{-2})	(1.49×10^{-6} to 2.75×10^{-2})	(1.39×10^{-6} to 1.42×10^{-3})
Regulatory or health-based limits[a]	2.00×10^{-4}[b]	5.00×10^{-6}[c]	1.50×10^{-4}[d]	3.00×10^{-4}[e]
(Percent exceeding limit [%])	(57)	(68)	(48)	(14)
		1.00×10^{-4}[f]	1.50×10^{-3}[g]	6.00×10^{-6}[h]
		(46)	(11)	(75)

Note: To convert results in mg/m^3 to mg/puff, multiply by $6.67 \times 10^{-5} m^3$/puff. ATSDR, Agency for Toxic Substances and Disease Registry; Cr, chromium; Mn, manganese; MRL, minimum risk level; NAAQS, National Ambient Air Quality Standard; Ni, nickel; Pb, lead; RfC, cancer reference concentration.
[a]U.S. EPA NAAQS are regulatory, all other limits are health based.
[b]ATSDR MRL for Ni (ATSDR 2005a; U.S. EPA 2000a).
[c]MRL for Cr(VI) in mists (ATSDR 2012a). MRLs are daily averages.
[d]U.S. EPA NAAQS (rolling 3-month average) (U.S. EPA 2016).
[e]MRL for Mn (ATSDR 2012b). MRLs are daily averages.
[f]MRL for soluble Cr(III) (ATSDR 2012a). MRLs are daily averages.
[g]U.S. EPA NAAQS for non-attainment areas (U.S. EPA 2016).
[h]U.S. EPA RfC, daily values (U.S. EPA 2012).

dispenser and aerosol, dispenser and tank, and aerosol and tank samples, respectively (data not shown).

Metal Concentrations by Voltage, Type of Coil, and Frequency of Coil Change

All metals in Table 2 are shown in these analyses except Cd and Sb, because their concentrations were below 1 μg/kg for most samples. Metal concentrations in dispenser and aerosol samples were not statistically different by voltage (Table 5). In tank samples we found statistically significant differences by voltage tertiles for Al, Fe, and Mn, with the intermediate tertile presenting the highest metal concentrations. For Ni, the difference by voltage was borderline significant ($p = 0.05$) with concentrations also higher at the intermediate tertile (4.00–4.40 V). When analyzed by type of coil, metal concentrations in dispenser samples were similar (Table 6). In aerosol samples, Cr, Fe, Mn, Ni, Pb, and Sn concentrations were higher in those from devices with a Kanthal coil compared with other coils. In tank samples, those from devices for which the user did not know the type of coil showed the highest concentrations for all metals. These differences of metal concentrations by type of coil were not significant (except for Cu in tank samples). There were no statistically significant differences in metal concentrations by frequency of coil change for dispenser and tank samples (Table 7). In aerosol samples, all metals were more concentrated in the aerosol from users who change the coils more than twice per month, with significant differences for Al, Cr, and Mn (Table 7). In tank samples, Al, Cr, Fe, Mn, Ni, and Sn concentrations were also higher for samples from devices for which the participants reported coil change more than twice per month.

Aerosol Metal Concentrations

Concentrations for each of the detected metals are estimated to be daily averages, and span several orders of magnitude (Table 8). We focus on Ni, Cr, Pb, Mn, and As because, due to their toxicity when found in aerosols, these compounds have health-based

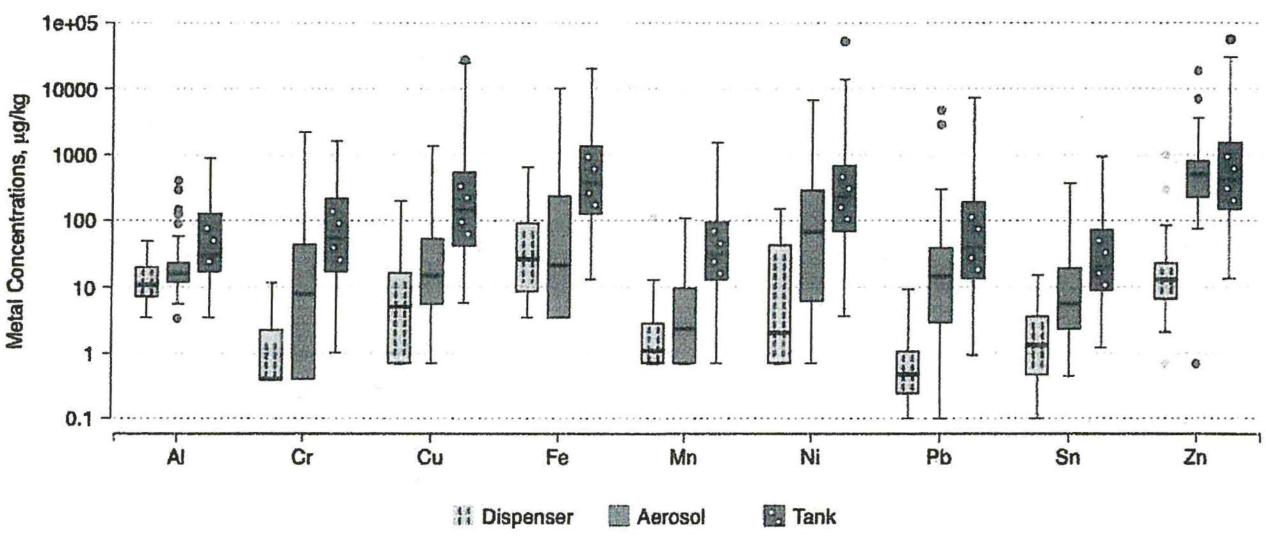

Figure 1. Boxplots of metal concentrations in e-cigarette dispenser, aerosol, and tank samples. The dispenser sample has not had any contact with the e-cigarette device. The horizontal lines within boxes indicate medians; boxes, interquartile ranges; whiskers, values within 1.5 times the interquartile range from boxes; solid circles outside the boxes, outlier data values. Table 2 lists the raw data for all metals represented in this figure. All metals in Table 2 are represented in this figure except Cd and Sb, as their concentrations were below 1 μg/kg for most samples. Note: For samples with ≥25% of the samples below the limit of detection, the minimum and the percentile 25th values are the same and therefore the lower whisker is missing.

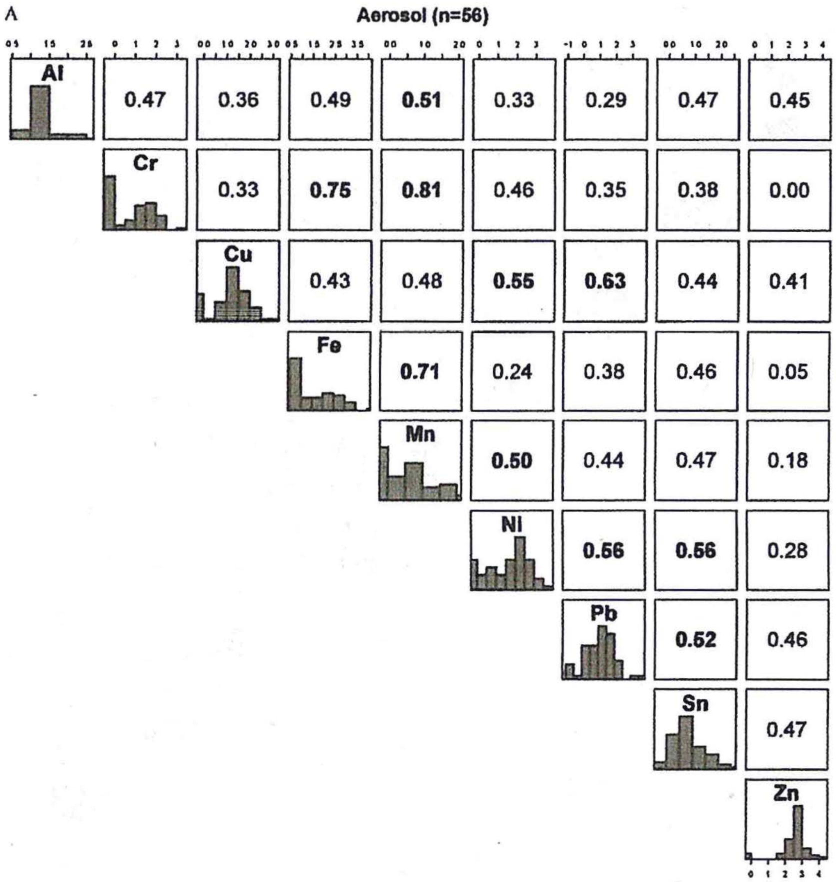

Figure 2. Correlations between metals in samples from e-cigarette devices: (*A*) aerosol samples, and (*B*) tank samples. All metals shown in Figure 1 are shown here. The diagonal panel shows the histograms of the $\log_{10}$-transformed distribution of each metal. The upper part of the panel represents the Spearman pairwise correlation coefficients between metals. The axes indicate the $\log_{10}$ metal concentrations values that are represented in the histograms. Correlations ≥ 0.50 are bolded.

limit concentrations. Ni concentrations ranged from 4.35×10^{-6} to 1.12×10^{-1} (median 4.44×10^{-4}) mg/m^3, and 57% of e-cigarette aerosol samples exceeded the Agency for Toxic Substances Disease Registry (ATSDR 2016) daily chronic minimum risk level (MRL) for Ni of 2.00×10^{-4} mg/m^3 (ATSDR 2005a; U.S. EPA 2000a). Cr concentrations ranged from 7.97×10^{-7} to 2.95×10^{-2} (median 8.46×10^{-5}) mg/m^3. Because we did not determine the valence state of Cr in our samples, we do not know what proportion was Cr (VI) (hexavalent) and which was trivalent. If Cr in our samples were Cr(VI), 68% of the samples would exceed the daily MRL for Cr(VI) in mist (5.00×10^{-6} mg/m^3), and 46% of the samples would exceed daily MRL for soluble Cr(III) (1.00×10^{-4} mg/m^3) if Cr in our samples were Cr(III) (ATSDR 2012a). Pb concentrations ranged from 1.49×10^{-6} to 2.75×10^{-2} (median 1.06×10^{-4}) mg/m^3, with 48% of aerosol samples exceeding the U.S. EPA National Ambient Air Quality Standard (NAAQS) (U.S. EPA 2016) of 1.50×10^{-4} mg/m^3 and 11% exceeding the standard in nonattainment areas of 1.50×10^{-3} mg/m^3. Mn concentrations ranged from 1.39×10^{-6} to 1.42×10^{-3} (median 1.97×10^{-5}) mg/m^3; 14% of samples exceeded the daily Mn MRL of 3.00×10^{-4} mg/m^3 (ATSDR 2012b) and 75% exceeded the U.S. EPA daily cancer reference concentration (RfC) of 6.00×10^{-6} mg/m^3 (U.S. EPA 2012). Arsenic concentrations, calculated only among the 10 aerosol samples (17.9%) with detectable arsenic (data not shown) ranged from 7.72×10^{-6} to 1.04×10^{-3} (median 1.50×10^{-4}) mg/m^3. All other metals investigated were also found in concentrations spanning three to four orders of magnitude (Figure 1) in the condensed aerosol, which would translate to several orders of magnitude in the air using Equation 1.

Discussion

In this assessment of metal concentrations in samples collected from tank-style devices of daily e-cigarette users in Maryland, we found that, for most metals, concentrations were markedly higher in samples collected from the tank and the aerosol compared with those collected from the refilling dispenser. Dramatic increases were observed in tank samples for Cr, Cu, Ni, Pb, and Zn concentrations (more than 35 times higher than in the dispenser samples) as well as in aerosol samples for Pb and Zn (more than 25 times higher than in the dispenser samples) and for Cr, Ni, and Sn (more than 6 times higher than in the dispenser samples). For Mn, the concentrations in tank and aerosol samples were 19.6 and 1.93 times higher than the dispenser samples respectively. For Al, Cd, and Sb, the concentrations were between 2.30 and 4.65 times higher in the tank and between 1.60 and 3.58 times higher in the aerosol compared with the dispenser samples. The finding of Pb in e-cigarette aerosol samples, a metal not listed among the components of heating coils but that can be present in metal alloys, is of major concern both directly for the consumer as well as for those involuntarily exposed to e-cigarette aerosol, especially children. For As, 10.7% of the dispenser samples had As detected. The similar concentrations found

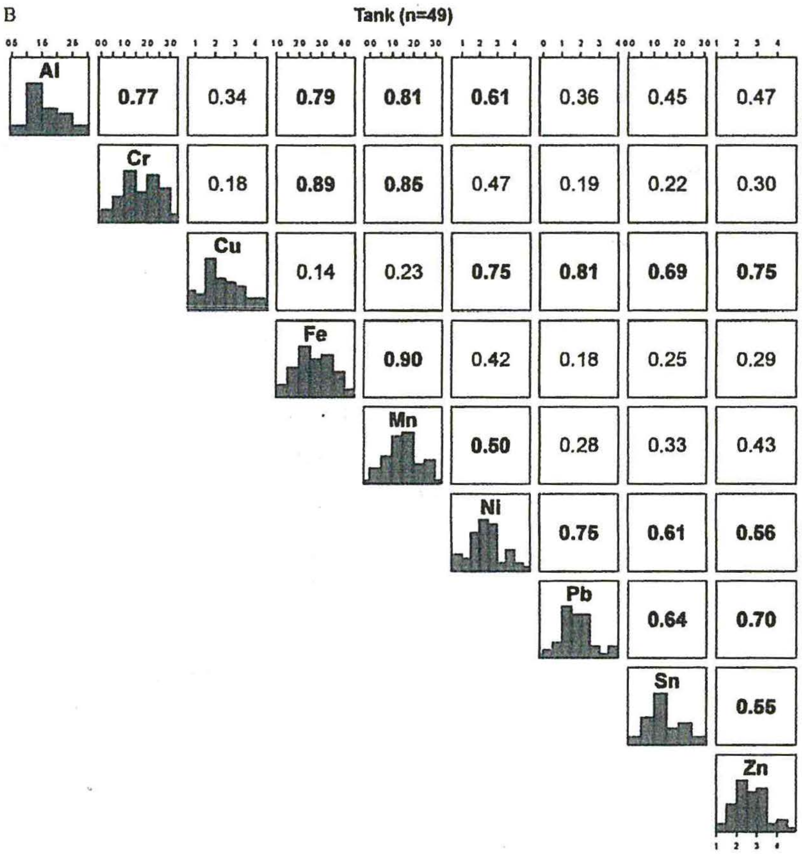

Figure 2. (*Continued.*)

in the dispenser, aerosol and tank samples, and the high correlation between detected As levels in the dispenser and those found in the aerosol and tank samples supports that when As is present in the dispenser e-liquid it gets transferred to the aerosol. It is concerning that there are e-liquid brands on the market that contain As and Pb in the dispenser. More research is necessary to confirm these findings and to determine how often As and Pb are present in e-liquids, and whether they are related to specific brands or manufacturers.

Higher correlations across metals in the aerosol and tank samples than in the dispenser suggest that several metals are being transferred from the device to the e-liquid in the tank as well as to the aerosol that is inhaled by the user. The most likely source of metals in the device is the heating coil, composed of complex metal alloys in most devices, although we cannot rule out that other parts of the device also contribute.

In our estimations of daily mass concentrations in the aerosol, 57% of e-cigarette aerosol samples exceeded the ATSDR (2016) daily chronic MRL for Ni of 2.00×10^{-4} mg/m^3 (ATSDR 2005a; U.S. EPA 2000a). Sixty eight percent of the samples exceeded the daily MRL for Cr(VI) in mist (5.00×10^{-6} mg/m^3) if Cr in our samples were Cr(VI), and 46% of the samples would exceed daily MRL for soluble Cr(III) (1.00×10^{-4} mg/m^3), if Cr in our samples were Cr(III) (ATSDR 2012a). For Pb, 48% of aerosol samples exceeded the U.S. EPA NAAQS of 1.50×10^{-4} mg/m^3 (U.S. EPA 2016). For Mn, 14% of samples exceeded the daily MRL of 3.00×10^{-4} mg/m^3 (ATSDR 2012b) and 75% exceeded the U.S. EPA daily RfC of 6.00×10^{-6} mg/m^3 (U.S. EPA 2012). Aerosol mass concentrations are likely underestimated, as in our formula we assumed that daily exposure is equivalent to 50 puffs, whereas recent research indicates the average is closer to 200 daily puffs (Aherrera et al. 2017; Robinson et al. 2015). We also assumed that we collected the total weight of the emitted aerosol, although we know that around 20% remains in the tubing and around 10% of the aerosol is lost through the venting groove of the collection device.

Only a few studies have addressed exposure to metals through e-cigarette aerosol. Most of them evaluated only one or two products and none of them formally compared the concentrations of metals in the aerosol to the concentrations in the original e-liquid before being in contact with the heating coil. These studies, however, provide useful information on which metals are detected in e-cigarette emissions and which ones are in higher concentrations compared with others. In a study of secondhand exposure from indoor usage of a single brand tank-style European device, aerosol-laden air was collected on quartz filters and analyzed for metals (Saffari et al. 2014). Indoor air concentrations of the metals with health-based limits (in mg/m^3) were: 4.22×10^{-6} for Cr, 4.73×10^{-6} for Mn, 6.14×10^{-6} for Ni, and 9.85×10^{-6} for Pb, whereas we estimated mainstream aerosol concentrations (mg/m^3) of 8.46×10^{-5} for Cr, 1.97×10^{-5} for Mn, 4.44×10^{-4} for Ni, and 1.06×10^{-4} for Pb (Table 8). A reason for why our values are at least an order of magnitude higher is that mainstream aerosol has not undergone mixing in indoor air like secondhand aerosol, which is what was measured in the study by Saffari et al. (2014). Also, the sampling of particles in their study (using quartz filters) could miss metals in vapor phase. In a study of metals in aerosol from 12 electronic cigarettes (with cartridges or cartomizers), collected using gas washing bottles with methanol, immersed in an acetone and dry-ice bath, Cd [range, non-detectable (ND)–0.22 μg/150 puffs], Ni (range, 0.11–0.29 μg/150 puffs), and Pb (range, 0.03–0.57 μg/150 puffs) were detected in almost all the devices tested (Goniewicz et al. 2014). Based on a 70-mL puff, as reported by Goniewicz et al. their results in mg/m^3 would be (ranges)—Cd (ND–2.10×10^{-2} mg/m^3), Ni (1.05×10^{-2} to 2.76×10^{-2} mg/m^3), and Pb (2.86×10^{-3} to 5.43×10^{-2} mg/m^3)—which are similar to the ranges that we obtained for Ni (4.35×10^{-6} to 1.12×10^{-1} mg/m^3) and Pb (1.49×10^{-6} to 2.75×10^{-2} mg/m^3) (Table 8).

Another study determined metal concentrations in the aerosol of several cigalike devices and a tank-style device (Mikheev et al. 2016) by collecting total particulate matter (TPM) on quartz filters. Of the metals that we report, based on the vaping topography that Mikheev et al. described, and following their assumption that the average mass of TPM/puff was 2 mg, we estimated the following concentration ranges: for As (2.7×10^{-4} to 2.7×10^{-2} mg/m^3), Cr (1.1×10^{-2} to 1.3×10^{-1} mg/m^3), Ni (1.3×10^{-3} to 1.3×10^{-1} mg/m^3), and Zn (4.0×10^{-2} to 1.3 mg/m^3) (Mikheev et al. 2016). These results need to be compared with caution because Mikheev et al. (2016) analyzed mostly cigalike devices and, in their own words, they provide only a rough assessment of metal content. Nevertheless, it is interesting to note that even a rough assessment provides mass fractions and variability similar to our results.

In a study of 22 cigalike cartomizers, aerosol was characterized by size, and found that particles >1 μm contained Sn, Ag, Fe, Ni, and Al, while nanoparticles <100 nm contained Sn, Cr, and Ni (Williams et al. 2013). Pb was also detected in the aerosol using ICP–optical emission spectrometry (0.017 μg/10 puffs). In a more recent study by the same investigators, 35 of 36 screened elements were detected in the aerosols of disposable e-cigarettes and electronic hookahs, whereas only 15 were detected in conventional tobacco smoke (Williams et al., 2017). Metals such as Pb, Cu, Ni, or Sn were present at significantly higher concentrations in the aerosols compared with cigarette smoke (Williams et al., 2017). In a study of e-liquid in the cartomizers of five cigalike brands purchased in Maryland, Cd (mean concentration ranged from 0.42–205 μg/L), Cr (53.9–2,110 μg/L), Pb (4.89–1,970 μg/L), Mn (28.7–6,910 μg/L), and Ni (0.059–22.6 mg/L) were found in the e-liquids analyzed that were in contact with the unused cartomizer coil, indicating the transfer of metals from the coil to the e-liquid in cigalike devices (Hess et al. 2017). A French study analyzing 15 trace elements in e-liquids from refilling dispenser have also shown low concentrations (with the majority of the samples under the lower limits of quantification) of most metals analyzed, except for Al, As, Co, Cr, and Sb (average concentrations 12.9, 1.57, 0.262, 7.16, and 7.21 ppb, respectively) (Beauval et al. 2016). This is similar to what we found in our study as many of the metals were under the LOD in most of the dispenser e-liquid samples, and those metals detectable in over 50% of the e-liquid samples (Al, Cu, Fe, Mn, Ni, Pb, Sn, and Zn) in general presented low median metal concentrations.

In our study, metal concentrations tended to be lower in aerosol than in tank samples. Correlations between concentrations of different metals were lower in the aerosol than in the tank. We do not have a definite explanation for these differences, but metal concentrations in the tank e-liquid cannot be expected to be equal to those in the aerosol for the following reasons: *a*) Mass transfer of metal compounds into the aerosol can be expected to be metal specific. *b*) Some of the metals have been shown to exist as solid beads within the aerosol droplets, and it is hypothesized that the beads originate from metallic e-cigarette components such as the heating coil (Williams et al. 2013). Transfer of these beads from the tank to the aerosol can be expected to be element- and size-specific where size in turn is likely element specific. *c*) Metals may continue to leach from the coil to the tank even after the generation of the aerosol has stopped. *d*) The efficiency of our aerosol collection device can be expected to depend on aerosol droplet size (Tien and Ramarao 2007, Long and Hilpert 2009), and it cannot be assumed that different metals are equally distributed in different size fractions. At the beginning of our collection process, (within the first puffs), when drops are starting to be formed inside the tubing, more droplets in the 300–500 nm range will escape from the collection device than larger and smaller droplets, which are more efficiently collected on the device walls due to the processes of impaction and diffusion, respectively. After the first liquid drop forms, completely filling the inside diameter of the tubing, all particle sizes are collected with equal efficiency through interception. The liquid formed is pushed towards the collection tube with the incoming aerosol.

Furthermore, we do not know at this point if our collection method can efficiently capture metals in the gas phase of the aerosol, such as those from potentially volatile compounds of Pb and Zn. However, we found similar concentrations of Pb and Zn in aerosol and tank samples compared with other metals, suggesting that the significant loss of these potentially volatile compounds did not occur. More research is needed to investigate the distribution of metals generated in e-cigarettes within particulate and gas phases. In a biomonitoring study conducted with the users of the e-cigarettes analyzed in the present study, concentrations of Ni and Cr in the urine and saliva of these e-cigarette users were more strongly associated with the corresponding metal concentrations measured in the aerosol than with metal concentrations in the tank, supporting that our aerosol sample reflects what an e-cigarette user is inhaling (Aherrera et al. 2017).

Our findings suggest that using e-cigarettes instead of conventional cigarettes may result in less exposure to Cd but not to other hazardous metals found in tobacco. In mainstream smoke from conventional tobacco cigarettes available in the United States (Pappas et al. 2014), the highest concentrations were found for Cd (ranging from <5.0 to 80 ng per cigarette), followed by Pb (ranging from <5.0 to 23 ng per cigarette). The rest of the element analyzed (As, Co, Cr, Mn and Ni) were below 10 ng/cigarette. For Ni and Cr, specifically, most samples were below the lower detection limits. In the Surgeon General Report (CDC 2010), the range of metal concentrations in mainstream smoke were the following for As (40–120 ng/cigarette), Ni (ND–600 ng/cigarette), Cr (hexavalent) (4–70 ng/cigarette), Cd (41–62 ng/cigarette), Co (0.13–0.20 ng/cigarette), and Pb (inorganic) (34–85 ng/cigarette). Directly comparing smoking a cigarette to vaping behavior is difficult and was not the purpose of our study. However, if we assume that 15 puffs is equivalent to one cigarette (St Helen et al. 2016), and based on a mean puff volume of e-cigarettes in our study of 66.67 mL, the range (median) of metal concentration (in nanograms per 15 puffs) in our study would be 0.004–110 (0.444) for Ni, 0.001–30.0 (0.085) for Cr, 0.002–27.0 (0.106) for Pb, 0.001–1.40 (0.020) for Mn, 0.002–66.1 (4.49) for Zn, and 0.008–1.00 (0.151) for As. Saffari et al. (2014) compared the emission rates of different metals in an e-cigarette to a conventional combustible tobacco cigarette and found the emission rates were higher in e-cigarettes for elements like Ti, Cr, Ni, and Ag, and lower for elements like Cu, Cd, Zn, and Pb. Our findings are consistent for Cr, Ni, and Cd; however, for Pb and Zn we found concentrations that were similar to those found in cigarette smoking in some samples. Additional research, including biomarker studies, are needed to compare cigarette smoking and e-cigarette use as sources of metal exposure.

The metals detected in e-cigarettes have been associated with multiple adverse health effects under chronic conditions of exposure. Pb is a major neurotoxicant both for children and aging populations and is also associated with increased risk of cardiovascular disease and kidney disease (Navas-Acien et al.

2007; Fadrowski et al. 2010), diseases that are a major motivation for smokers to quit. Pb is especially of concern because it cannot be easily excreted from the body and because the health effects have been observed at low levels of exposure with no evidence of a threshold (Lin et al. 2006). Any unnecessary Pb exposure should be avoided. In addition, Cr and Ni are established inhalation carcinogens (IARC 2012a, 2012b). The U.S. EPA has stated that the classification of Cr(VI) as a known human carcinogen raises a concern for the carcinogenic potential of Cr(III) because of the possible oxidation of Cr(III) to Cr (VI) within the oxygen-rich environment of the lungs (U.S. EPA 2000b). Therefore, even though we did not speciate our samples for the Cr oxidation state, these results can be of concern.

Other metals that are essential nutrients through the ingestion route can have serious negative effects when inhaled. For example, Fe can produce respiratory irritation, metal fume fever, siderosis, and fibrosis (Johnson et al., 1985); Mn can induce lung irritation, coughing, bronchitis and pneumonitis, reduced lung function, pneumonia, manganism (a Parkinson-like disease), and other neurological outcomes (ATSDR 2012b; O'Neal and Zheng 2015). Cu can produce respiratory irritation, coughing, sneezing, chest pain, and runny nose (ATSDR 2004); and Zn can cause metal fume fever, reduced lung function, chest pain, coughing, dyspnea, and shortness of breath (ATSDR 2005b). The health effects for inhalation of Fe, Mn, Cu, and Zn have been detected mostly in occupational settings during both acute and chronic exposures at relatively high levels. These effects might not translate into chronic e-cigarette exposure. Arsenic, detected in 17.9% of our aerosol samples, also represents a potential concern due to its high toxicity in numerous organs and body systems; for example, cancer and cardiovascular disease have both been associated with inorganic As exposure (Saint-Jacques et al. 2014; Moon et al. 2012). Arsenic speciation, however, was not conducted. Additional research is needed to identify which As species are present in e-cigarette aerosol.

In addition to the device composition, other factors could play a role in e-cigarette metal exposure. We found some suggestion for a role of voltage; among metals that are associated with commonly used coils, Al, Fe, Cr, and Ni concentrations were higher in the middle voltage tertile for tank samples but not for aerosol samples. However, tank concentrations tended to be lower in the upper tertile than in the medium one, whereas aerosol concentrations tended to be higher. These voltage-dependent concentrations need to be interpreted carefully because they are based on self-reported data but they could be related to the rates of mass transfer of the metals and their compounds among the solid alloy of the coil, the tank's e-liquid surrounding the coil, and the vapor as well as on the chemical equilibria between these different thermodynamic phases. For instance, the higher aerosol concentrations in the upper voltage tertile can at least be partially attributed to a saturated vapor pressure, which increases with temperature and hence voltage. The increased vapor pressure should increase transfer of dissolved metal compounds into the vapor phase, from which the aerosol is formed. This would be consistent with an e-cigarette study that examined parameters affecting the release of aldehydes (Sleiman et al. 2016). They observed that increasing the voltage applied to a single-coil device from 3.3 to 4.8 V caused the mass of e-liquid consumed to double and the total aldehyde emission rates to triple. Age of the device, temperature, and vaping regime could contribute to the degradation of the coil and other metallic parts of the device and increase exposure to metals, although we lacked information on those factors in this study. However, leaching of metals from the coil into the e-liquid could potentially be enhanced by corrosion as has also been observed for Pb in drinking-water pipes (Edwards and Dudi 2004).

Despite some limitations, our findings can inform strategies aimed at reducing the risk of metal exposure in e-cigarette users, including testing for metals as part of the regulation of e-cigarette products. Strengths of our study include the collection of an aerosol sample that has not been filtered or diluted during the collection process and that likely reflects what the consumer is inhaling. Although our sampling method has not been validated against other methods that evaluate metals in aerosol samples through the use of filters, the collection of the aerosol in liquid form allowed the direct comparison with the original e-liquid from the dispenser, as well as liquid from the tank. Another strength is the sampling of a highly diverse number of e-cigarette devices used by daily e-cigarette users in Maryland. Additional research is needed to better understand the metal compounds in e-cigarette emissions, their absorption through the respiratory tract, and the potential health effects of e-cigarette metal related exposures.

Conclusions

Our results add to the existing evidence that e-cigarettes are a relevant source of exposure to a wide variety of toxic metals including Cr, Ni, and Pb as well as to essential metals that are potentially toxic through inhalation such as Mn and Zn. Metal concentrations in the e-liquid from the original dispenser increased markedly in the same e-liquid after it was added to the device and was brought into contact with the heating coil, both in the generated aerosol and in the liquid that remained in the tank. These findings support the hypothesis that metals are transferred from the device (most likely the coil) to the e-liquid and from the e-liquid to the aerosol that is inhaled by the user. Due to potential toxicity resulting from chronic exposure to metals in e-cigarette aerosols, additional research is needed to more precisely quantify metal exposures resulting from e-cigarette use and their implications for human health, and to support regulatory standards to protect public health.

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Universal Lead Testing in Maryland: How Did We get here?

Clifford S. Mitchell, MS, MD, MPH
Director, Environmental Health Bureau
Maryland Department of Health
February 2, 2018

MARYLAND
Department of Health

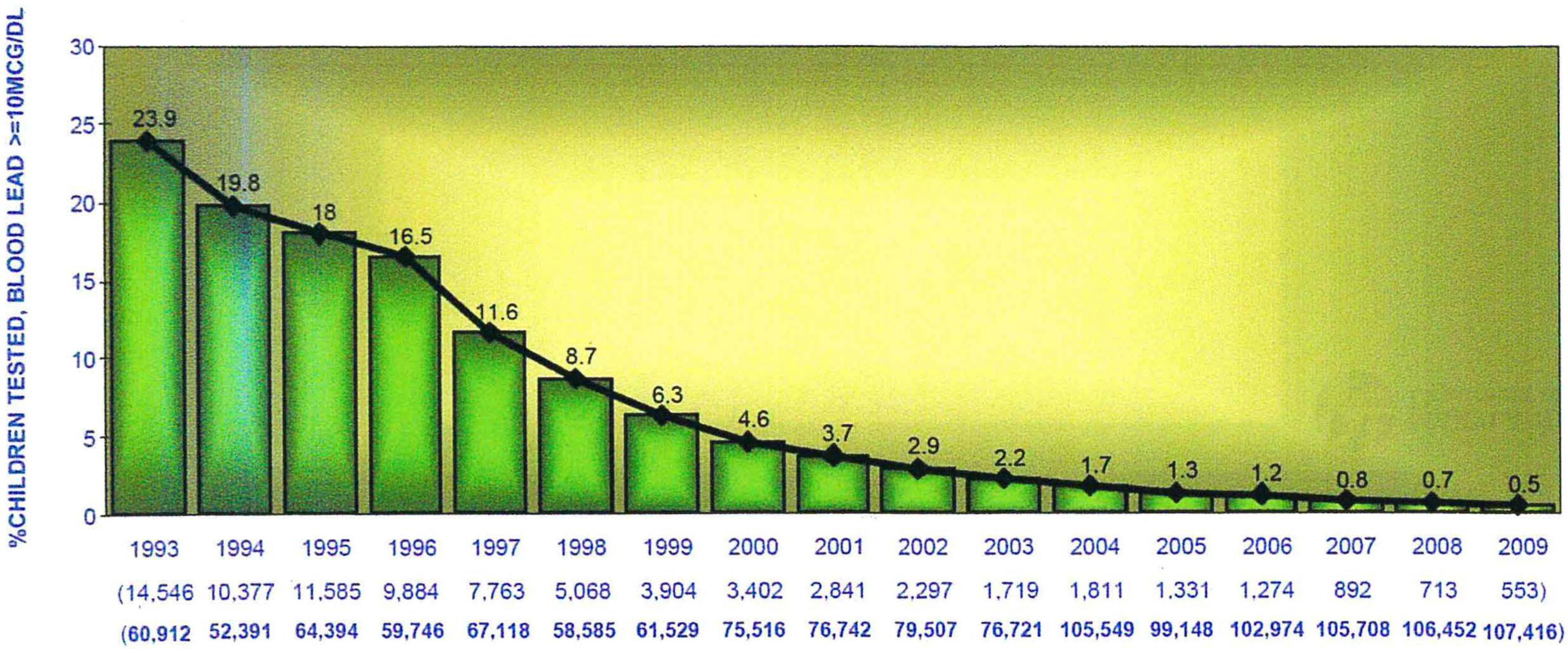
Questions

- How did Maryland decide that it would move from targeted testing to universal testing?
- What factors, including epidemiology and data, played a role in the decision process?
- Implementation and outreach strategies
- Evaluation

Background

- ❖ Maryland and Lead
  - History
  - Legal/regulatory
  - Testing requirements

MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD BLOOD LEAD SURVEILLANCE
STATEWIDE 1993-2009



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

MDE

MARYLAND Health

At Risk Areas by Zip Code – Revised 2004 *

Allegany
ALL

Anne Arundel
20711
20714
20764
20779
21060
21061
21225
21226
21402

Baltimore Co.
21027
21052
21071
21082
21085
21093
21111
21133
21155
21161
21204
21206
21207
21208
21209
21210
21212
21215
21219
21220
21221
21222
21224
21227
21228
21229
21234
21236
21237

Baltimore Co. (Cont.)
21239
21244
21250
21251
21282
21286

Baltimore City
ALL

Calvert
20615
20714

Caroline
ALL

Carroll
21155
21757
21776
21787
21791

Cecil
21913

Charles
20640
20658
20662

Dorchester
ALL

Frederick
20842
21701
21703
21704
21716
21718
21719
21727

Frederick. (Cont)
21757
21758
21762
21769
21776
21778
21780
21783
21787
21791
21798

Garrett
ALL

Harford
21001
21010
21034
21040
21078
21082
21085
21130
21111
21160
21161

Howard
20763

Kent
21610
21620
21645
21650
21651
21661
21667

Montgomery
20783
20787

Montgomery (Cont)
20812
20815
20816
20818
20838
20842
20868
20877
20901
20910
20912
20913

Prince George's
20703
20710
20712
20722
20731
20737
20738
20740
20741
20742
20743
20746
20748
20752
20770
20781
20782
20783
20784
20785
20787
20788
20790
20791
20792
20799
20912
20913

Queen Anne's
21607
21617
21620
21623
21628
21640
21644
21649
21651
21657
21668
21670

Somerset
ALL

St. Mary's
20606
20626
20628
20674
20687

Talbot
21612
21654
21657
21665
21671
21673
21676

Washington
ALL

Wicomico
ALL

Worcester
ALL

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Analysis

- 2012 CDC Decision on ACLPP
- 2012 – 2013: CDC/CSTE Environmental Epidemiology Fellow
  - Analysis of blood lead testing strategies

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Department of Health and Mental Hygiene

Evaluation of Potential Strategies for Targeting Childhood Lead Testing in Maryland

Sybil Wojcio, MPH[1], John Krupinsky, RN, BSN[2], Ezatollah Keyvan-Larijani, MD, DrPH[2], Clifford S. Mitchell, MS, MD, MPH[1]
[1]Environmental Health Bureau, Maryland Department of Health and Mental Hygiene, [2]Lead Surveillance Program, Maryland Department of the Environment

INTRODUCTION

Exposure to lead remains the most significant and widespread environmental hazard for Maryland (MD) children. In 2011, there were 342 new cases of children with blood lead levels (BLL) greater than or equal to 10 µg/dL. Through primary prevention efforts aimed at reducing lead paint in rental housing, and testing of children at 1 and 2 years of age in targeted areas and populations, the state has significantly reduced the population lead level and number of lead poisoned children. However, there has been a gradual decrease in the proportion of cases due to lead paint exposure in rental housing, with an increasing proportion coming from owner-occupied homes, old or imported toys, lead-painted pottery, hobbies, traditional home remedies or cosmetic items and clothing contaminated with lead from the workplace.

The goal of this project is to evaluate and revise the targeting strategy used to identify children in MD who should automatically be tested for lead exposure. The current targeting strategy, developed in 2000 and revised in 2004, is based on zip code of residence, or enrollment in Medicaid's EPSTD program. Currently, the testing rate for children <6 years old is 21.9% in the state overall, with 27.7% of children in targeted areas compared to 20.1% in non-targeted areas tested.

METHODS

SAS Version 9.2 and ArcGIS ArcMap10 were used for all data summary and analysis.

Data Sources:
- MD Childhood Lead Registry, 2005-2009 lead test records
- MD Department of Assessments & Taxation property data
- U.S. Census data & USPS zip codes

Targeting Strategies:

Strategy 1— Base testing on the distribution of 2005-2009 lead tests.

Assumption: If every child in a zip code were tested, the percentage overall with a BLL ≥5µg/dL is the same as the percentage actually tested with a BLL ≥5µg/dL.

Analysis: Proportion of test results ≥5µg/dL by zip code applied to each zip code's population of children <6 years old. Areas were ranked based on the expected number of children with a BLL ≥5µg/dL

Strategy 2—Target testing based on an updated version of the 2000 Maryland Targeting Model.

Assumption: Historical risk factors continue to be the primary influences on a child's risk of lead

Analysis: Logistic regression model, with census tract as the unit of analysis and "risk area" as the outcome:

$$logit\,(Risk=1) = \beta_0 + \beta_1 \times (\%\ Pre\ 1950\ housing) + \beta_2 \times (Poverty\ Index) + \beta_3 \times (Median\ Housing\ Value) + \beta_4 \times (\%\ 1950\text{-}79\ Housing) + \beta_5 \times (\%\ Children\ Tested\ for\ EBL)$$

"Risk area" is defined as a census tract with ≥5% (upper estimate) or ≥17% (lower estimate) of test results ≥5µg/dL in the results presented here. (Additional "risk area" definitions based on the distribution of BLLs in MD were also assessed in the full report).

Strategy 3—Universal testing for a defined period of time.

Assumption: There is no child for whom lead exposure is impossible. As efforts to eliminate exposure from old housing have succeeded, other routes of exposure have become more common.

Analysis: This strategy requires no modeling or data analysis.

RESULTS

Strategy 1 Results—The expected number of children with a BLL ≥5µg/dL was calculated for each zip code, and the zip codes with the highest number of estimated children were identified.

- Lower Estimates: 50% of children expected to have a BLL ≥5µg/dL reside in the 32 zip codes indicated in Figure 1. An estimated 95,116 children <6 years old live in these zip codes (2010 Census).
- Upper Estimates: 90% of children expected to have a BLL ≥5µg/dL reside in the 173 zip codes indicated in Figure 2. An estimated 374,621 children <6 years old live in these zip codes (2010 Census).

Strategy 2 Results — Data from the MD Childhood Lead Registry and American Community Survey were used to develop logistic regression models predicting the number of children with blood lead levels ≥5µg/dL residing in each census tract based on different "risk area" definitions.

- Lower Estimates: An estimated 106,570 children live in the 358 "at risk" census tracts indicated in Figure 3. For this model, a risk area was defined as a tract with ≥17% of test results ≥5µg/dL.
- Upper Estimates: An estimated 385,885 children live in the 986 "at risk" census tracts indicated in Figure 4. For this model, a risk area was defined as a tract with ≥5% of test results ≥5µg/dL.

Strategy 3 Results—This strategy requires that all children will be tested at one year and two years of age (146,037 children, based on 2010 census data), regardless of place of residence or any other consideration. This strategy would be recommended for a period of three years, enough time to develop a more complete understanding of the actual distribution of blood lead levels throughout the State.

Figure 1. Targeting Strategy 1, Risk Area Capturing 50% of Children Expected to have a BLL ≥5µg/dL

Figure 2. Targeting Strategy 1, Risk Area Capturing 90% of Children Expected to have a BLL ≥5µg/dL

Figure 3. Targeting Strategy 2, Risk Area based on modeled risk areas defined as ≥17% of test results ≥5ug/dL

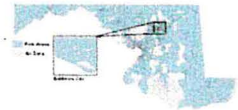

Figure 4. Targeting Strategy 2, Risk Area based on modeled risk areas defined as ≥5% of test results ≥5ug/dL

DISCUSSION

This represents the first comprehensive review of the Maryland targeting strategy, based on up-to-date testing and demographic data. It explores a range of possible alternatives, allowing the public, policy makers, and public health professionals to choose a strategy based on the most complete understanding of the strengths and limitations of the data.

A strength of the analysis is that it uses the most up to date available data for blood lead testing and demographic characteristics of the State. It also looks at the broadest possible range of alternative strategies, and is explicit about all of the assumptions used in creating the strategies.

A limitation is that two of the alternative strategies are based on historical testing data, which are not representative of the BLLs of all MD children. They are likely more representative in targeted areas, where greater numbers of children are tested. The two alternatives are also highly influenced by population size and 2005-2009 testing rates — areas with large populations are more likely to be classified as "at risk." The data also have limitations in geographic resolution, timeliness and availability.

CONCLUSION

The adoption of a particular strategy depends on a number of factors, including:
- The estimated number of lead exposed children who would be identified, as well as the estimated number of lead exposed children who might be missed based on selective (non-universal) testing strategies;
- Costs of testing and associated follow up;
- Impacts of expanded testing on both public health and on the health care system;
- Potential benefits of identifying children with low-level exposures before they become significantly exposed; and
- Potential limitations of the data and models used to analyze each of the targeting strategy options.

The Department is currently in the process of evaluating the strengths and weaknesses of each of the three options in order to develop its final recommendations.

Contact:
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This project was supported in part by an appointment to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded by the Centers for Disease Control and

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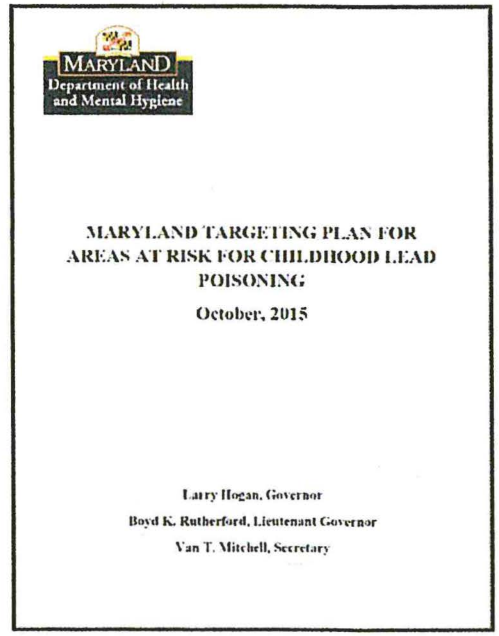
Updating the Targeting Plan and Regulations

- 2013 – Internal/external discussions on development of revised testing strategy
- 2014 – Update to Targeting Plan
  - Extensive stakeholder and public input
- October, 2015 – Release of revised Targeting Plan



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MARYLAND TARGETING PLAN FOR AREAS AT RISK FOR CHILDHOOD LEAD POISONING

October, 2015

Larry Hogan, Governor

Boyd K. Rutherford, Lieutenant Governor

Van T. Mitchell, Secretary

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Lead Testing Strategy

- Testing of all children age 12 and 24 months
- Re-evaluation of strategy after 3 years and review of surveillance data
- Clinical guidelines for health care providers

Outreach and Communications

- Kickoff – 2015 Lead Poisoning Prevention Week
- Regulations – COMAR 10.11.04
  - Key decision – "phasing in"
- Clinical Guidelines
  - Mailed to all health care providers

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LEAD-FREE MARYLAND KIDS

BECAUSE LEAD HAS NO BOUNDARIES, MARYLAND IS EXPANDING BLOOD LEAD TESTING REQUIREMENTS FOR CHILDREN THROUGHOUT THE STATE IN 2016

The change: The new 2015 **Maryland Targeting Plan for Areas at Risk for Childhood Lead Poisoning** defines the entire State as "at risk" for lead exposure, for children born on or after January 1, 2015. As a result, all children born **on or after January 1, 2015** must be tested for lead at 12 and 24 months of age.

What will not change:

1. Children enrolled in Medicaid Early and Periodic Screening, Diagnostic, and Treatment program (EPSDT) are still required to have testing at 12 and 24 months.
2. Children born before January 1, 2015 will be tested as before, using the 2004 Targeting Plan (children in specific at-risk ZIP codes, primarily in areas with older housing).
3. Parents should still be asked about lead exposure risks at all well-child visits using a DHMH questionnaire.

Key Points for Lead Screening in Maryland:

- The picture of lead exposure in Maryland has changed, showing that **Lead Has No Boundaries.** A higher percentage of children are now exposed to lead in settings other than older rental units, such as: in owner-occupied homes; in other countries before moving to Maryland; through lead in consumer products; and through other exposures. Maryland is moving to eliminate lead exposure throughout the State.
- The new blood lead testing requirements are both evidence and science based.
- Follow up testing and evaluation are essential for elevated blood lead tests.
- Parents, caregivers and health care providers will see a phased in approach to the changes.
- Children are most vulnerable to the adverse effects of lead exposure before age six and these efforts are aimed at preventing ongoing lead exposure and long-term adverse effects.
- After three years, DHMH will reassess the 2015 Targeting Plan, looking at the new lead testing data from across the State.
- Changes in DHMH regulations now make it easier for health care providers to do lead point of care testing.
- Programs are in place and resources are available to support implementation of these changes through State and local agencies.

For more information, email dhmh.envhealth@maryland.gov or call 1-866-703-3266

Lead Poisoning Prevention Week
Lead-Free Maryland Kids

Lead is found in all areas of Maryland, from many different sources.

A blood lead test is the only sure way to know whether your child has been exposed to lead.

All Maryland children born on or after **January 1, 2015** should have a blood lead test at **12** and **24** months of age.

Lead Has No Boundaries

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1-866-703-3266

2016 Maryland Guidelines for the Assessment and Management of Childhood Lead Exposure

For Children 6 Months to 72 Months of Age

Test Blood Lead Level according to **Table 1**

Confirm all capillary blood lead levels ≥ 5 mcg/dL with venous sample. Follow ** **Table 2** for schedule.

Guidelines for Action **Table 3 and Table 5**

Schedule Follow-up Venous Blood Lead Testing for all ≥ 5 mcg/dL **Table 4**

Table 1: Guidelines for Blood Lead Level Testing in Children 6 Months to 72 Months of Age (COMAR 10.11.04, as of 3/28/2016)

For ALL children born on or after 1/1/15, OR on Medicaid, OR ever lived in a 2004 At-Risk Zip code*

6 Months	9 Months	12 Months	15 Months	18 Months	24 Months	30 Months	36 Months	48 Months	60 Months
Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen
Test if indicated	Test if indicated	Test Blood Lead Level	Test if indicated	Test if indicated	Test Blood Lead Level	Test if indicated	Test if indicated	Test if indicated	Test if indicated

For children born before 1/1/15, AND not on Medicaid, AND never lived in a 2004 At-Risk ZIP code*

6 Months	9 Months	12 Months	15 Months	18 Months	24 Months	30 Months	36 Months	48 Months	60 Months
Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen
Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated

Screening	• Perform Lead Risk Assessment Questionnaire (questions found in Lead Risk Assessment Questionnaire section of this document) • Clinical assessment, including health history, developmental screening and physical exam • Evaluate nutrition and consider iron deficiency • Educate parent/guardian about lead hazards
Indications for Testing	• Parental/guardian request • Possible lead exposure or symptoms of lead poisoning, either from health history, development assessment, physical exam or newly positive item on Lead Risk Assessment Questionnaire. *(Questions can be found in the Lead Risk Assessment Questionnaire section of this document)* • Follow-up testing on a previously elevated Blood Lead Level *(Table 4)* • Missed screening: If 12 month test was indicated and no proof of test, then perform as soon as possible after 12 months and then again at 24 months. If 24 month test was indicated and no proof of test, then perform test as soon as possible. • For more information about lead testing of pregnant and breastfeeding women, see: http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf

*See back of chart for list of 2004 At Risk ZIP codes

Table 2: Schedule for Confirmatory Venous Sample after Initial Capillary Test **

Capillary Screening Test Result	Perform Venous Test Within
< 5 mcg/dL	Not Required
5 - 9 mcg/dL	12 weeks
10 - 44 mcg/dL	4 weeks
45 – 59 mcg/dL	48 hours
60 - 69 mcg/dL	24 hours
70 mcg/dL and above	Immediate Emergency Lab Test

***Requirements for blood lead reporting to the Maryland Childhood Lead Registry are located at COMAR 26.02.01. Reporting is required for all blood lead tests performed on any child 18 years old and younger who resides in Maryland.*

Table 3: Abbreviated Clinical Guidance for Management of Lead in Children Ages 6 Months to 72 Months

Blood Lead Level	Follow-up testing	Management
< 5 mcg/dL	On schedule **Table 1**	• Continue screening and testing on schedule. • Continue education for prevention. • If new concern identified by clinician, then retest blood lead level.
5-9 mcg/dL	3 months See **Table 4**	All of above AND: Investigate for exposure source in environment and notify health department. • For more detail consult **Table 5**
≥ 10 mcg/dL	See **Table 4**	Consult **Table 5**

Table 4: Schedule for Follow-up Venous Blood Lead Testing after Blood Lead Level ≥ 5 mcg/dL

Venous Blood Lead Level	Early follow-up testing (2-4 tests after identification)	Later follow-up testing after blood lead level declining
5 - 9 mcg/dL	1 - 3 months***	6 - 9 months
10 - 19 mcg/dL	1 - 3 months***	3 - 6 months
20 - 24 mcg/dL	1 - 3 months***	1 - 3 months
25 - 44 mcg/dL	2 weeks - 1 month	1 month
≥ 45 mcg/dL	As Soon As Possible	As Soon As Possible based on treatment plan

Seasonal variation of Blood Lead Levels exists, greater exposure in the summer months may necessitate more frequent follow-up.

**** Some clinicians may choose to repeat elevated blood lead test within a month to ensure that their BLL level is not rising quickly. (Advisory Committee on Childhood Lead Poisoning Prevention - CDC 2012)*

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Issues

- Insurance Coverage
- "I thought we'd taken care of lead?"
- Flint, Michigan

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Evaluation

- In CY 2016, a total of 118,619 children aged 0-72 months were tested, a 7.1% increase in the number tested at age 0-72 months when compared with the average during CY 2010-2015 (110,706)
- The percent of children aged 12 and 24 months tested in CY 2016 (44.5%) was increased by 12.1% relative to the mean percentage of children tested over CY 2010-2015 (39.7%)

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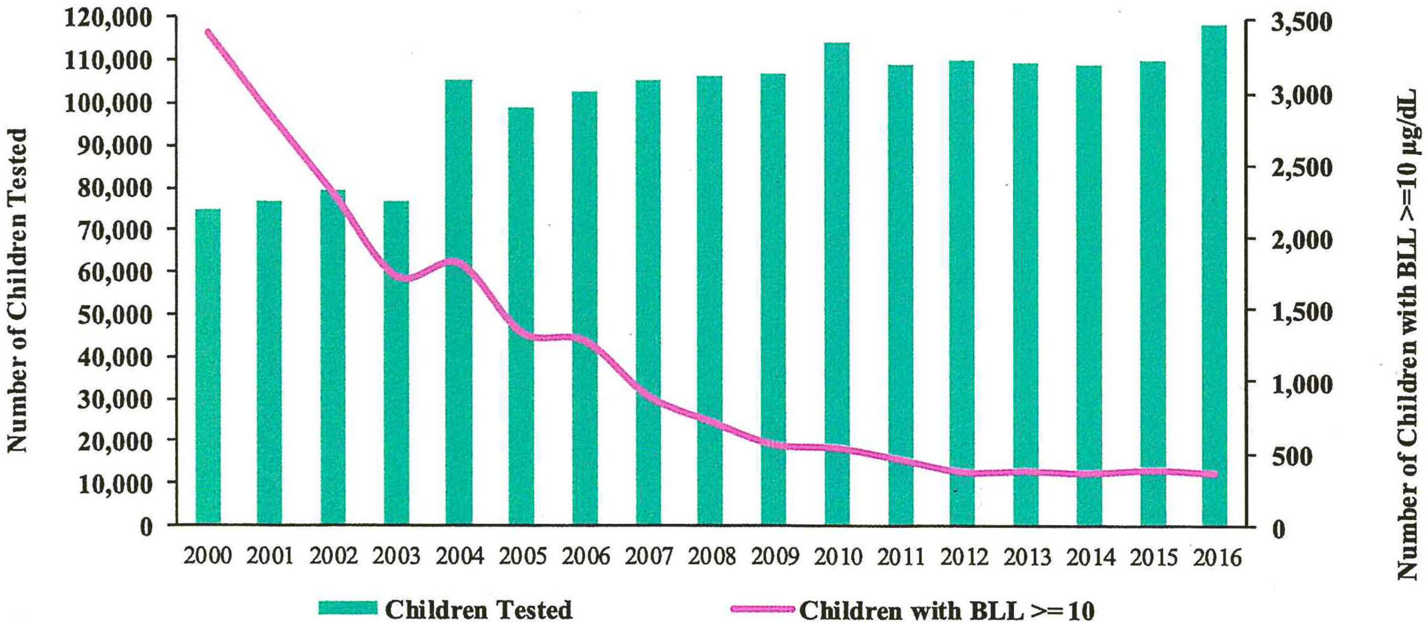
Number of Children Aged 0-72 Months Tested for Lead and Number of Those Children Reported to Have Blood Lead Levels ≥10 µg/dL: CY 2000-2016



Source: Maryland Childhood Lead Registry 2016 Annual Report

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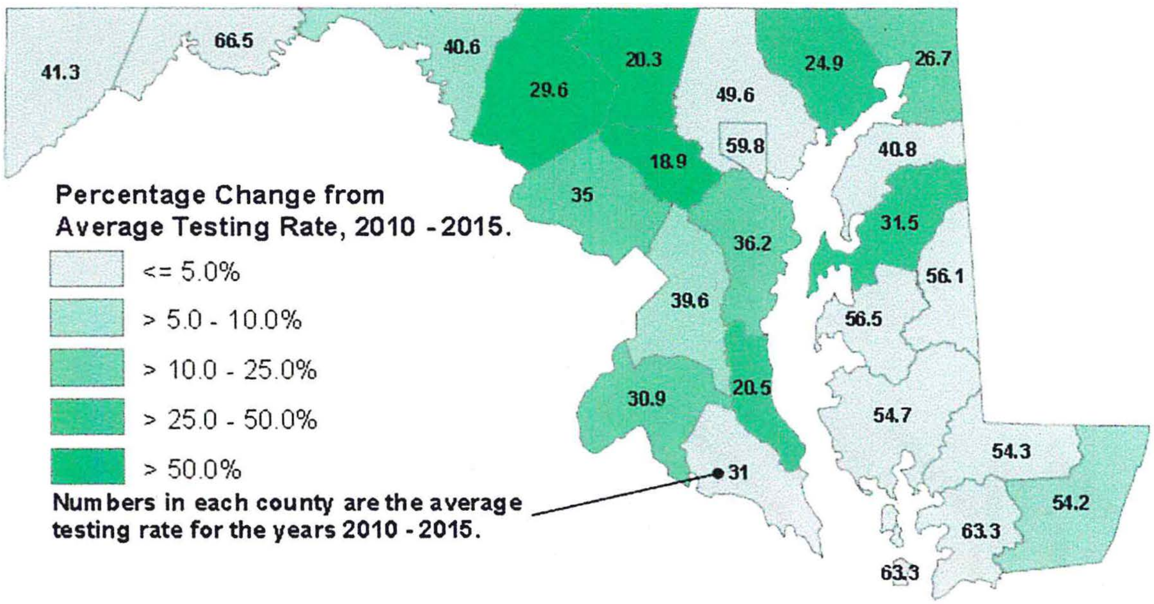
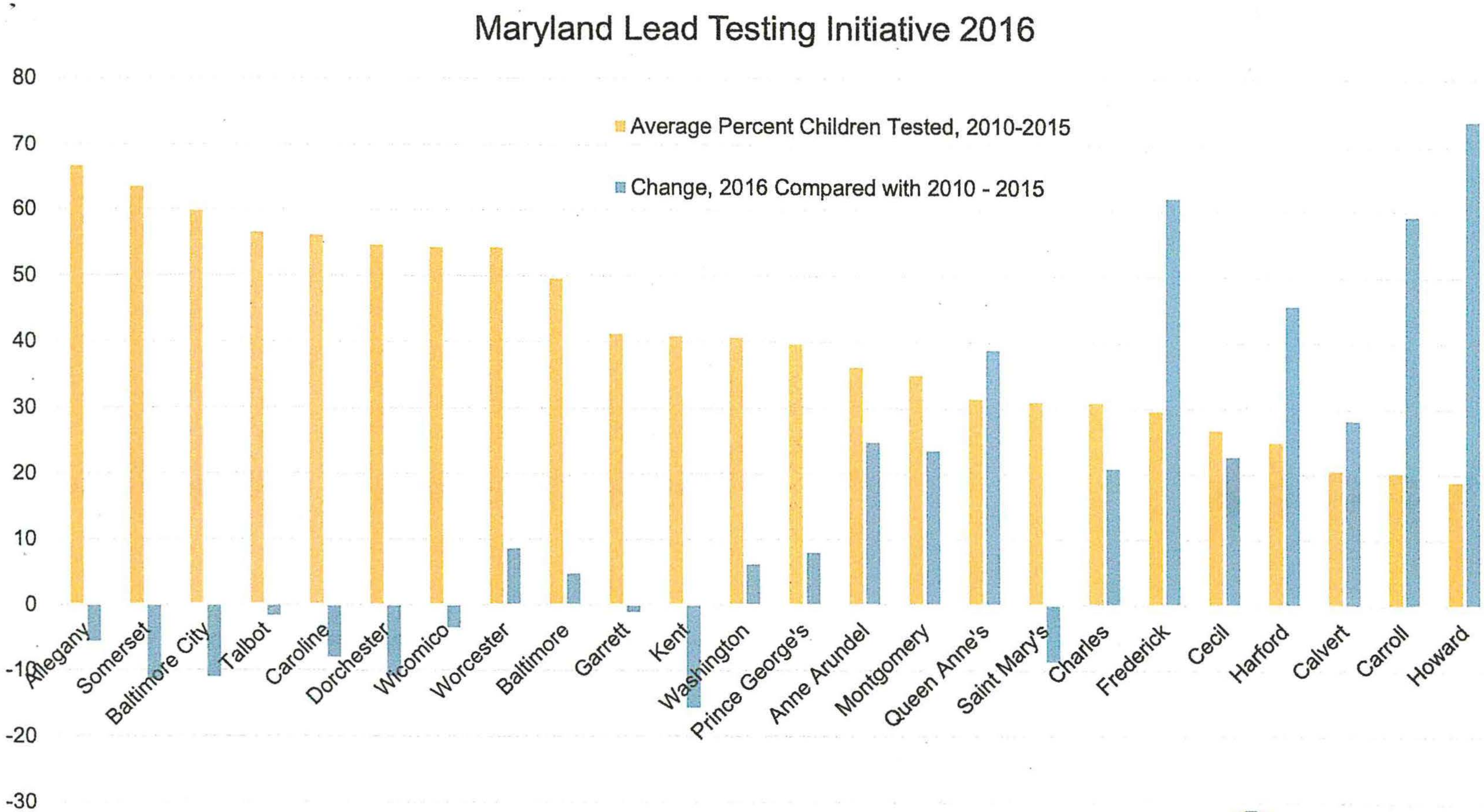
First Year of the Initiative

Change in 2016 Maryland Blood Lead Testing Rates of One and Two Year Old Children by County, Compared with Average Rates of Blood Lead Testing from 2010 - 2015.



Source: Maryland Childhood Lead Registry

MARYLAND Department of Health



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Lessons Learned

- Data counts
- Change takes time
- Timing is everything
- Partners are critical

Acknowledgments

- Maryland Department of the Environment, Center for Childhood Lead Poisoning Prevention
- Maryland Commission on Lead Poisoning Prevention
- Green and Healthy Homes Initiative
- CDC/CSTE Applied Epidemiology Fellowship Program

Maryland Department of Health

Prevention and Health Promotion Administration

https://phpa.health.maryland.gov

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AUGUST 2, 2018

LEAD POISONING PREVENTION
COMMISSION MEETING

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

August 2, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L.	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
MARTONICK, John P.	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

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GUESTS

Governor's Lead Commission Meeting Attendance Sheet

August 2, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Matthew Hudson	EHB-Hopkins	201 W Preston Baltimore MD 21201
Camile E. Burke	BCHD	—
Dawn Joy	AMA	
Erin Paul	ARC	1311 S. Haubert Street Baltimore MD 21230
Shane Brancet	MDE	—
Bill Peach	HABC	William.PEACH@HABC.ORG
Jack Daniel	DHCD	
Lisa A Horne	MDH	201 W Preston St 21201
Ruth Ann McCartney [illegible]	GHHI	

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, August 2, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business

III. New Business

MDE Compliance and Enforcement Update	Paula Montgomery
DHCD 4th Quarter Update	Jack Daniels
Baltimore City CLPPP Fiscal Year Report	Camille Burke

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, September 6, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
   A. Maryland Department of the Environment
   B. Maryland Department of Health
   C. Maryland Department of Housing and Community Development
   D. Baltimore City Health Department
   E. Baltimore City Department of Housing and Community Development
   F. Office of Childcare
   G. Maryland Insurance Administration
   H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
August 2, 2018

APPROVED Minutes

Members in Attendance
Shana G. Boscak, Anna L. Davis, Benita Cooper, Susan Kleinhammer, Patricia McLaine, John P. Martonick, Cliff Mitchell, Paula Montgomery, Barbara Moore, Leonidas Newton, Christina Peusch (via phone), Adam Skolnik

Members not in Attendance
Mary Beth Haller, Manjula Paul, John Scott

Guests in Attendance
Shante Branch (MDE), Camille Burke (BCHD), Jack Daniels (DHCD), Matthew Hudson (EHB-Hopkins), Ludeen McCartney-Green (GHHI), Lisa Horne (MDH), Dawn Joy (AMA), Erin Paul (Arc), Bill Peach (HABC)

Welcome and Introductions
Pat McLaine called the meeting to order at 9:35 AM with welcome and introductions.

Approval of Minutes
A motion was made by Adam Skolnik, seconded by Cliff Mitchell to accept the July 2018 minutes as amended. All present Commissioners were in favor and the minutes were approved.

Old Business
HUD Grant Report – quarterly reports for January–March 2018 and April-June 2018 were received from Sheneka Fraiser-Kyer, Lead Hazard Reduction Program, Department of Housing and Community Development, Division of Green Healthy and Sustainable Homes. There were no questions about the reports. Cliff Mitchell noted that Baltimore City now has three funding streams for kids with BLLs of 5µg/DL and higher: HUD grants program, the Asthma and lead program and the housing program funded by Medicaid. Baltimore City is one of nine jurisdictions taking part in a lead and asthma program offering a strictly defined set of services including home visits, supplies and a protocol; a separate evaluation is planned. Health outcomes will be followed. Mixed funding streams are a challenge for Baltimore City. Regarding tracking, Cliff Mitchell said that the jurisdictions provide information to MDH by ID, including lost to follow-up, services received and outcomes.

Pat McLaine stated that Sheneka Fraiser-Keyer had requested that the Lead Commission provide a letter to HUD in support of their new application, going in today. A draft letter of support was reviewed. Motion was made by Adam Skolnik seconded by Anna Davis to send the letter of support to HUD. All present Commissioners were in favor; the letter was signed and will be delivered to Sheneka Fraiser-Kyer this morning.

New Business

MDE Compliance and Enforcement Update

Paula Montgomery reviewed a written report on the last fiscal year from MDE ending June 2018. "Significant Violations" are violations with a direct impact on public health. The inspection rate (42%) is based on the number of registered properties and the number of sites with inspections (includes accredited lead paint service providers and MDE). Paula Montgomery indicated that some of the ongoing significant violations had been settled. The 117 inspected sites with significant violations represented 5% of all inspections done by MDE. In the last fiscal year, MDE issued formal actions for 907 units. In terms of the significant violations, 1123 were resolved and 616 are on-going. With regards to enforcement actions, 144 Administrative Actions were taken by MDE, one action was filed in District Court, 116 penalty and enforcement actions were taken, one case was referred to the AG for criminal action and MDE entered into 4 SEPS affecting 631 units. Total administrative or civil penalties collected in the last fiscal year were $375,840. Paula indicated that this report is on MDE's website and suggested Commissioners could look at historical data if desired; a few of the elements have changed over time. Sue Kleinhammer stated that the number of units registered at the end of the FY seemed low (133,809). Ninety thousand properties were built pre-1950. She wondered if thousands of pre-1950 units may be non-compliant. Adam Skolnik stated that most of the multi-family units are lead free. Paula Montgomery said she is concerned about the number of 1950-1978 units and thinks the numbers should be double what they are. She stated that Maryland has almost 150,000 lead-free units. Pat McLaine asked if there is a large number of properties that are not registered and not lead free. Paula Montgomery stated that MDE does determine if children were poisoned in non-compliant properties. Kids are not being poisoned in compliant properties. Paula Montgomery stated she would need to run another program to find out.

John Martonick stated that he didn't think it is a leap of faith that there are a lot of kids living in non-compliant properties that don't get tested. Maybe we should be creating a database so we can identify properties that are not compliant. Paula Montgomery stated that the BLLs are going down. A large number of Maryland children were exposed to lead before coming to the US. There are more non-housing factors involved with new cases. The number of children poisoned in older housing is decreasing due to enforcement, outreach and education, better screening and knowledge by health care providers. Paula Montgomery stated that she believes this is working. When the law first started, 60,000 children were tested. MDE expects that more than 118,000 children were tested in 2017.

Adam Skolnik suggested that if one line is added to the report – the number of lead-free units, which MDE already has, the report would be clearer. The American Community Survey estimates there are 729,000 total rental units in Maryland.

Paula Montgomery stated that MDE can provide the number of lead free units since the program began. She suggested there may be some double counting (for example, "passing lead free certs" and "limited lead free since 1996"). Paula Montgomery stated she would do that for the next report.

DHCD – 4th Quarter Update

Jack Daniels provided a written report for review. DHCD now has just less than $1.7 million in 3 programs, with remediation in 109 properties. The Healthy Homes for Healthy Kids program was added at about $500,000. DHCD received an additional $4.66 million in additional funding for the Healthy Homes for Healthy Kids program.

DHCD is providing a match for BCHD's proposed HUD Grant, being submitted today. The Agency's Baltimore City Lead Initiative has been funding Baltimore City. In Western Maryland, DHCD made a presentation about the program; so far DHCD has identified a large group of properties in Hagerstown and has two applications in Alleghany County. Cliff Mitchell is doing at least one Grand Rounds on testing and the program in Western Maryland and the success of the program looks good.

Jack Daniels stated that the majority of properties treated under this program are owner-occupied. The new Healthy Homes for Healthy Kids is expected to include rental properties. This program cannot treat properties with more than 4 units (these require multi-family funding). Sue Kleinhammer asked about resources for Western Maryland and Shore counties. Jack Daniels said that he can provide information about other funds available to property owners in Western Maryland, Worcester and the other Shore counties. Rental properties must be registered with no existing fines. Jack Daniels stated that the program's Assistant Director now lives in Berlin and works in the Cambridge office one day per week. Ludeen McCartney-Green asked if families were relocated. Jack Daniels stated they were but that no money was provided for food. He said that DHCD looks for short term leases or local hotels. The program includes relocation and storage of belongings. Abatement may be $80-100,000 if the property has contaminated soil. Local Health Departments are doing some testing of non-housing items.

Baltimore City Childhood Lead Poisoning Prevention Fiscal Year Report

Camille Burke provided an outline of the report for the Commission to review; she is still waiting for data. She asked Commissioners to provide feedback; she will present the report at an upcoming meeting. Point of Care testing by BCHD program started in October 2017. A new pamphlet was just printed by Housing and Community Development on the new registration and licensing requirements for all rental properties. Prior to this, lead violations were separate from the housing system; now lead is a part of the housing system. A new grant from CDC is outreach-focused, not primary prevention. The City is determining what it will do. Saturday, August 4, is the City's Back to School event. BCHD is providing immunizations and lead testing at War Memorial. BCHD will also test adults who request it. Adam Skolnik noted that the City's inspection form is on-line now. Jason is working on this. Home inspectors will look for rental registration and certificate or lead free certificate. Sue Kleinhammer suggested there may be issues with the checklist. Adam Skolnik noted there is an impact on multi-family property owners too; home inspectors will have to do most of the inspections for multi-family properties. Ludeen McCartney-Green noted that certification is required before the owner can get a license number. Registration fee is $30; there is some confusion. District Court will be providing trainings in October 2018; GHHI will be providing assistance. This is a good step.

Maryland Multi-Housing Association has supported inspection of all rental properties for more than two years. The law states that the owner must show proof that the property has met the requirements of the lead law. Section 8 properties with Section 8 certificates don't need an additional inspection. The City identifies the age of property and rental/owner occupancy status.

Other New Business

Paula Montgomery noted that National Lead Week is in October; she asked for ideas and suggestions from the Commission and interested public. Last year, the focus was on universal testing

Cliff Mitchell said that MDH is thinking about this too. He suggested that the Commission might want to think about our progress, long term goals and vision. What is our goal for eliminating childhood lead poisoning? We are seeing relatively few children with BLLs of 10µg/dL or higher but we are seeing significant numbers of children with BLLs in the 5-9µg/dL range. We can't eradicate lead poisoning because there is too much lead in the environment to eliminate exposures. What is our strategy related to source reduction and prevention? Cliff Mitchell suggested that it is time to give the public, the governor, the legislature a sense of our goal for controlling lead in Maryland.

Adam Skolnik stated that this suggested that we might need a strategic planning meeting, which he thought was a great idea. He recommended we hire a facilitator. What is the strategic plan for the Commission?

Paula Montgomery suggested that the Commission should look at the 5-9µg/dL BLLs from the source perspective: should we keep incorporating kids from other countries in the numbers? Do we have evidence that housing interventions are working in terms of preventing BLLs 5-9µg/dL?

Cliff Mitchell asked, as a practical matter, what do we want? MDH wants to ensure that kids are not exposed. Providers see kids and identify exposures and manage effectively. The Department of Education – how are they providing for kids with lead exposure? The Commission needs to provide additional guidance to Maryland. Where are we? What is still needed? We clearly have not eliminated all lead sources in the state.

Cliff Mitchell indicated that MDH's Commissions on Environmental Justice and Sustainable Communities and the Children's Environmental Health and Protection Advisory Council would also be interested in what the Commission decides to do.

Paula Montgomery and Cliff Mitchell will discuss strategies for funding for strategic planning. Adam Skolnik will provide concrete suggestion for the strategic planning next month. Both will report back at the September meeting.

Future Meeting Dates

The next Lead Commission Meeting is scheduled for Thursday, September 6, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment – nothing else to report

Maryland Department of Health – Cliff Mitchell reported that MDH will be working with the Childhood Lead Registry staff to conduct analysis of the first full year of universal testing to evaluate success, identify problems and areas for improvement. November begins the second fiscal year of operating two Medicaid-funded programs focused on lead. MDH will report on outcomes associated with those programs. Nine jurisdictions are participating, nearly 80% of kids with BLLs of 5μg/dL and above.

Maryland Department of Housing and Community Development – Jack Daniels stated he had nothing more to add. DHCD has $2.5 million already committed and approved in the new FY. He stated that DHCD expects to use all the state funding by February 2019.

Baltimore City Health Department – Camille Burke reported that Baltimore City has been named the 2018 Local Health Department of the year by the National Association of City and County Health Organizations (NACCHO).

Baltimore City Housing and Community Development – nothing to report

Office of Child Care – no representative present

Maryland Insurance Administration – Benita Cooper asked what the Commission would be interested in hearing about. Suggestions were made: what the agency is doing now; from a monetary perspective, are additional funds needed?

Public Comment
Chris Peusch reported that the pre-1978 child care regulations on lead are being written; there has been confusion about the type of certification that is needed. The child care community wants more information; MDE will follow up.

Adjournment
A motion was made by Cliff Mitchell to adjourn the meeting, seconded by Adam Skolnik. The motion was approved unanimously and the meeting was adjourned at 11:15 AM.

Department of Housing and Community Development

Division of Green Healthy and Sustainable Homes

Lead Hazard Reduction Program

Quarterly Report

April– June 2018

Units Receiving Hazard evaluations	17
Units with Hazards Identified	17
Units completed and cleared	16
Units in Progress	20
Units under contract	17
Training efforts	0
People trained	0
Completed Events	43
Event Attendees	1554
Home Visits	37

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION

August 1, 2018

Mr. Matt Ammon, Director
Office of Healthy Homes and Lead Hazard Control
U.S. Department of Housing and urban Development
451 7th Street, SW
Washington, DC 20410

Re: HUD Lead-Based Paint Hazard Reduction Program FR-6200-N-12
Supporting Baltimore City's Lead Hazard Reduction Program – Application

Dear Mr. Ammon:

The Governor's Lead Poisoning Prevention Commission enthusiastically endorses the application of the Baltimore City Department of Housing and Community Development (HCD) in seeking $4.1 million in federal funding over the next forty-two months to make at least 250 homes lead safe for children at risk of lead paint poisoning. The Commission recognizes that HCD has secured matching from State of Maryland in the amount of $1,750,000 to make the program successful, and help the City reach their goals.

The Commission brings state agencies for health, housing, and the environment to the table and coordinates effort related to lead poisoning prevention that cut across state and local agencies. The Baltimore City Health Department and Baltimore City Department of Housing and Community Development keeps the Commission informed about the progress of HCD's program to make homes lead safe for children at risk. These two City agencies have created a strong partnership that identifies children at risk, educates the public and mitigates the risks.

The Commission recognizes the importance of a holistic approach to reducing environmental hazards in the home, and supports HCD's request of $600,000 for Healthy Homes Supplemental Funding. These funds are critical to providing comprehensive mitigation to not only remove lead-paint hazards and reduce instances of lead-paint poisoning, but also to address other health and safety hazards in the home to increase safety and reduce instances of asthma and other indoor environmental related diseases.

The Governor's Lead Poisoning Prevention Commission will continue to serve as a broad-based advisory group to HCD as it works to implement HUD's Lead Hazard Reduction Program in lead poisoning in the city. We strongly request that you fully fund their application and help us we seek to protect our children and bring an end to childhood lead poisoning in the City. Thank you.

Sincerely,

Patricia McLaine, DrPH, MPH, RN
Chairperson
Governor's Lead Poisoning Prevention Commission

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Patricia McLaine, DrPH, MPH, RN
Chairperson
Governor's Lead Poisoning Prevention Commission

ALL rental properties in Baltimore city must be inspected.

While all rental properties are required to be **registered** with the City, up until now, one- and two-family dwellings were not required to also be **licensed** to operate as a rental. Now, **ALL** rental properties, whether multi-family or one- and two-family dwellings, must be registered and licensed to operate as a rental.

In order to be licensed, properties must be inspected by a Maryland State Licensed Home Inspector that is approved by the Baltimore City Department of Housing and Community Development (DHCD) to conduct rental inspections in Baltimore city.

Due Dates

All rental properties must be registered, inspected and licensed. By **January 1, 2019**.

All properties must be registered annually. Even if your property is not a rental but is non-owner occupied it still must be registered annually.

In order to receive a license, your property must be inspected.

Find a DHCD approved Maryland State Licensed Home Inspector at http://dhcd.baltimorehousing.org/

In order to receive a license, your property must pass inspection.

How much does an inspection cost? How do I find an inspector?

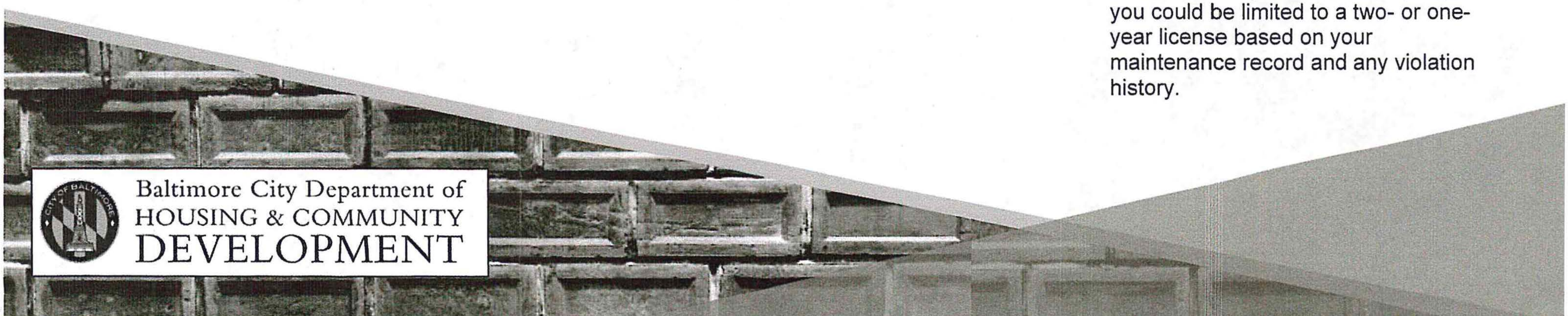
Fees can vary based on the licensed inspector you hire. Each State Licensed Home Inspector sets their own rates. A list of approved inspectors is available at http://dhcd.baltimorehousing.org/

When can I have an inspection done?

Inspections can be completed any time after August 1, 2018, but must be submitted with your registration prior to December 31, 2018.

How often must I have an inspection?

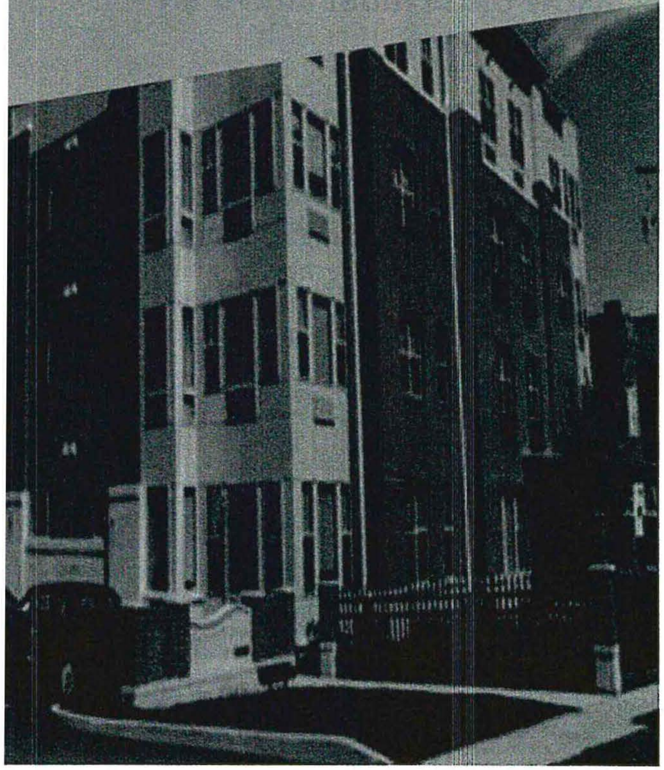
Rental licensing is built on a tier system designed to reward property owners that correctly maintain their rental units. All initial licenses are issued for a two-year period. When it is time for renewal, you may be able to obtain a three-year license. Equally, you could be limited to a two- or one-year license based on your maintenance record and any violation history.



Baltimore City Department of HOUSING & COMMUNITY DEVELOPMENT

Rental Property rules have changed in Baltimore City.

If you own rental property, please be aware of these new requirements for all one- and two-family rental properties as well as multi-family dwellings.



Please know:

Failing to have your property registered and licensed could result in a $1,000 fine and suspension, revocation or denial of your rental license.

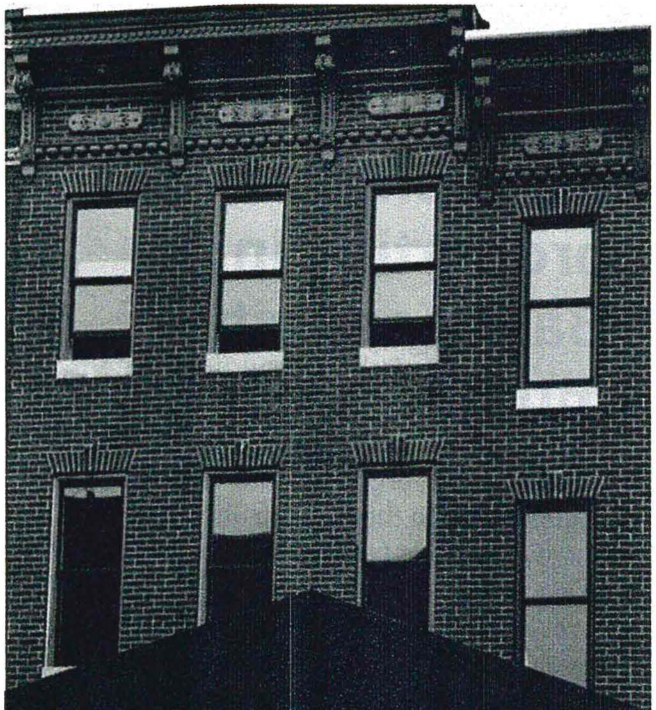
Your property must pass inspection prior to obtaining your license.

A checklist of what inspectors will look for is available at http://dhcd.baltimorehousing.org/

Steps You Must Take

- Contact an approved inspector
- Pass your inspection
- Visit DHCD online to complete registration
- Upload required documents
- Pay the registration fee
- Print your license
- Make sure license is accessible in one- and two-family units
- Make sure license is posted in multi-family dwellings
- Post a sanitation guide in common areas

Rev. Date 7/10/18



NEW Registration and Licensing Requirements

Non-Owner Occupied Dwelling Units

Baltimore City Department of HOUSING & COMMUNITY DEVELOPMENT

Lead Poisoning Prevention

Performance Measure			TOTAL
PERMITTED SITES/FACILITIES			
Number of permits/registrations issued (accreditations)			1,257
Number of permits/registrations (accreditations) in effect at fiscal year end			2,923
OTHER REGULATED SITES/FACILITIES			
Number of registrations processed			N/A
Number of units registered as of end of FY			133,809
INSPECTIONS			
Number of sites inspected ("inspected" defined as at the site)			
By accredited lead paint service providers			113 - MRR 30,591 - FRR 22,626 - LF units 53,330 Total Units
By MDE			2,234
Number of sites audited but not inspected (places where MDE reviewed submittals but did not go to the site)			13
Number of sites evaluated for compliance (sum of the three measures above)			55,577
COMPLIANCE PROFILE			
Number of inspected sites/facilities with significant violations			117
Percentage of inspected sites/facilities with significant violations **			5%
Inspection coverage rate (number of sites inspected/coverage universe) ***			42%
SIGNIFICANT VIOLATIONS- Violations that were alleged in Complaint Order & Penalties and those identified in Consent Agreements.			
Number of significant violations involving environmental or health impact			907
Number of significant violations based on technical/preventative deficiencies (Accredited Community)			4
DISPOSITION OF SIGNIFICANT VIOLATIONS			
Resolved			1,123
Ongoing			616
ENFORCEMENT ACTIONS**			
Number of compliance assistance rendered			14
	Administrative	Civil/Judicial	Total
Number of show cause, remedial, corrective actions issued Complaint, Order & Penalties (CO) Issued and Consent Agreements executed.	144	0	144
Number of injunctions obtained _Issued when Owner fails to bring properties into compliance when ordered to do so in a CO. Filed in District Court.	1	0	1
Number of penalty and other enforcement actions – Notice of Non-compliance, warning letter, advisory letters.	116	0	116
Number of referrals to Attorney General for possible criminal action			1
Number of SEPs entered into / units affected- (See page 2)			4/631
PENALTIES			
Amount of administrative or civil penalties obtained ($ collected in FY)			$375,840

* This total number also includes government fee exempt units.
** Significant violation percentage is based on MDE inspections only.
***Inspection coverage rate includes MDE and third-party inspections.
****There was a change in tracking method starting in FY 2013

Land and Materials Administration SEPs, FY 2018

Total SEPs: 5
Total Value: $6,101,000

The Land and Materials Administration (LMA) entered into five (5) SEPs during FY 2018 for lead enforcement cases. The SEPs either required the property owner to certify units as meeting the Lead Free or Limited lead free requirement, or to replace all windows in their affected rental unit containing lead based paint. The following table lists each of the SEPs LMA entered into in FY 2018.

Program	Case #	Property Owner	Description	SEP Value
Lead	17-15-22210	Luy Huynh	1 - SEP, Units requiring Window Replacement	$4,000
Lead	15-03-19614	Garden View Apartments Association	589 – SEP, Units requiring to be certified as Lead Free (one time only).	$5,890,00
Lead	16-21-19650	Hagerstown Housing Authority	39 – SEP, Units requiring to be certified as Limited Lead Free.	$195,000
TSOP	17-06-23494	George Naylor	1 - SEP, Units requiring Window Replacement	$4,000
Lead	17-30-23109	Nelson Polun	2 - SEP, Units requiring Window Replacement	$8,000

Childhood Lead Poisoning Prevention Program

Lead Commission Report
To be presented i~~n August~~ 2018

I. Baltimore City Lead Poisoning Data

A. Number of children poisoned in Baltimore City

1. Children with blood Lead levels of 5-9.
2. Children with blood Lead levels of 10+

B. 2017 Sources of Lead Poisoning for pre 1950 owner occupied residences

C. 2017 Sources of Lead Poisoning for pre 1978 MDE Registered Rentals

D. Average time for Initial Home Visits

E. General Data

II. Case Management

A. Medical

B. Environmental

III. Primary Prevention

IV.Outreach

V. Point of Care Testing

VI.Partners

A. Work with MCO's

B. Public Housing (Gilmor Homes-Jobs Plus)

VII. Moving Forward

ECONOMIC IMPACT REPORT FISCAL YEAR 2018 (07/01/17-06/30/18)
SPECIAL LOAN PROGRAMS

PROGRAM	COUNTY	FISCAL YEAR	# UNITS	AMT OF FUNDS	# GRANTS	# LOANS	SOURCE	STAGE
LEAD HAZARD REHABILITATION	Allegany							
LEAD HAZARD REHABILITATION	Anne Arundel	2018	8	$133,688	7	1		
LEAD HAZARD REHABILITATION	Baltimore	2018	5	$95,244	5			
LEAD HAZARD REHABILITATION	Baltimore City	2018	58	$876,394	56	2		
LEAD HAZARD REHABILITATION	Calvert							
LEAD HAZARD REHABILITATION	Caroline							
LEAD HAZARD REHABILITATION	Carroll							
LEAD HAZARD REHABILITATION	Cecil							
LEAD HAZARD REHABILITATION	Charles							
LEAD HAZARD REHABILITATION	Dorchester							
LEAD HAZARD REHABILITATION	Frederick							
LEAD HAZARD REHABILITATION	Garrett							
LEAD HAZARD REHABILITATION	Harford							
LEAD HAZARD REHABILITATION	Howard							
LEAD HAZARD REHABILITATION	Kent							
LEAD HAZARD REHABILITATION	Montgomery							
LEAD HAZARD REHABILITATION	Prince George's	2018	2	$47,970	2			
LEAD HAZARD REHABILITATION	Queen Anne's							
LEAD HAZARD REHABILITATION	Somerset							
LEAD HAZARD REHABILITATION	St. Mary's							
LEAD HAZARD REHABILITATION	Talbot							
LEAD HAZARD REHABILITATION	Washington							
LEAD HAZARD REHABILITATION	Wicomico							
LEAD HAZARD REHABILITATION	Worcester	2018	1	$41,020	1			
	SUBTOTAL		74	$1,194,316	71	3		

PROGRAM	COUNTY	FISCAL YEAR	# UNITS	AMT OF FUNDS	# GRANTS	# LOANS	SOURCE	STAGE
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Allegany							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Anne Arundel							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Baltimore							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Baltimore City	2018	32	$231,608	32			
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Calvert							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Caroline							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Carroll							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Cecil							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Charles							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Dorchester	2018	1	$76,608	1			
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Frederick							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Garrett							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Harford							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Howard							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Kent							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Montgomery							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Prince George's							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Queen Anne's							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Somerset							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	St. Mary's							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Talbot							
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Washington	2018	1	$98,178	1			
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Wicomico	2018	1	$91,800	1			
LEAD HAZARD REHABILITATION - Healthy Homes for Healthy Kids	Worcester							
	SUBTOTAL		35	$498,194	35	0		

SF REHABILITATION PROGRAM-MHRP	Allegany							
SF REHABILITATION PROGRAM-MHRP	Anne Arundel	2018	9	$342,378	8	1		
SF REHABILITATION PROGRAM-MHRP	Baltimore	2018	7	$241,243	4	3		
SF REHABILITATION PROGRAM-MHRP	Baltimore City	2018	35	$1,356,812	15	20		
SF REHABILITATION PROGRAM-MHRP	Calvert							
SF REHABILITATION PROGRAM-MHRP	Caroline							
SF REHABILITATION PROGRAM-MHRP	Carroll							
SF REHABILITATION PROGRAM-MHRP	Cecil	2018	1	$17,642		1		
SF REHABILITATION PROGRAM-MHRP	Charles	2018	2	$59,797		2		
SF REHABILITATION PROGRAM-MHRP	Dorchester	2018	1	$33,000	1			
SF REHABILITATION PROGRAM-MHRP	Frederick	2018	1	$80,190		1		
SF REHABILITATION PROGRAM-MHRP	Garrett							
SF REHABILITATION PROGRAM-MHRP	Harford	2018	2	$94,944		2		
SF REHABILITATION PROGRAM-MHRP	Howard							
SF REHABILITATION PROGRAM-MHRP	Kent							
SF REHABILITATION PROGRAM-MHRP	Montgomery							
SF REHABILITATION PROGRAM-MHRP	Prince George's	2018	27	$1,151,058	9	18		
SF REHABILITATION PROGRAM-MHRP	Queen Anne's	2018	3	$144,454	1	2		
SF REHABILITATION PROGRAM-MHRP	Somerset	2018	4	$66,715	2	2		
SF REHABILITATION PROGRAM-MHRP	St. Mary's	2018	1	$37,500		1		
SF REHABILITATION PROGRAM-MHRP	Talbot							
SF REHABILITATION PROGRAM-MHRP	Washington	2018	1	$7,320	1			

SF REHABILITATION PROGRAM-MHRP	Wicomico	2018	2	$38,311	1	1		
SF REHABILITATION PROGRAM-MHRP	Worcester							
	SUBTOTAL		96	$3,671,364	42	54		

SF REHABILITATION PROGRAM-IPP	Allegany							
SF REHABILITATION PROGRAM-IPP	Anne Arundel							
SF REHABILITATION PROGRAM-IPP	Baltimore	2018	1	$14,246	1			
SF REHABILITATION PROGRAM-IPP	Baltimore City	2018	6	$111,701	4	2		
SF REHABILITATION PROGRAM-IPP	Calvert	2018	1	$41,507	1			
SF REHABILITATION PROGRAM-IPP	Caroline							
SF REHABILITATION PROGRAM-IPP	Carroll							
SF REHABILITATION PROGRAM-IPP	Cecil							
SF REHABILITATION PROGRAM-IPP	Charles	2018	2	$43,736	1	1		
SF REHABILITATION PROGRAM-IPP	Dorchester							
SF REHABILITATION PROGRAM-IPP	Frederick							
SF REHABILITATION PROGRAM-IPP	Garrett							
SF REHABILITATION PROGRAM-IPP	Harford							
SF REHABILITATION PROGRAM-IPP	Howard							
SF REHABILITATION PROGRAM-IPP	Kent							
SF REHABILITATION PROGRAM-IPP	Montgomery							
SF REHABILITATION PROGRAM-IPP	Prince George's	2018	4	$81,803	3	1		
SF REHABILITATION PROGRAM-IPP	Queen Anne's							
SF REHABILITATION PROGRAM-IPP	Somerset	2018	3	$59,340	1	2		
SF REHABILITATION PROGRAM-IPP	St. Mary's							
SF REHABILITATION PROGRAM-IPP	Talbot							
SF REHABILITATION PROGRAM-IPP	Washington							
SF REHABILITATION PROGRAM-IPP	Wicomico							
SF REHABILITATION PROGRAM-IPP	Worcester	2018	2	$16,300	1	1		
	SUBTOTAL		19	$368,633	12	7		

SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Allegany							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Anne Arundel							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Baltimore							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Baltimore City	2018	1	$43,644		1		
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Calvert	2018	1	$152,429		1		
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Caroline							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Carroll							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Cecil							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Charles	2018	1	$175,149		1		
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Dorchester							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Frederick							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Garrett							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Harford							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Howard							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Kent							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Montgomery							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Prince George's	2018	2	$237,769	1	1		
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Queen Anne's							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Somerset	2018	3	$424,358		3		
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	St. Mary's							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Talbot							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Washington							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Wicomico							
SPECIAL TARGETED APPLICANT REHAB (STAR/HOME)	Worcester	2018	1	$144,823		1		
	SUBTOTAL		9	$1,178,172	1	8		

SF REHABILITATION PROGRAM-AHS	Allegany							
SF REHABILITATION PROGRAM-AHS	Anne Arundel	2018	4	$84,650	3	1		
SF REHABILITATION PROGRAM-AHS	Baltimore	2018	6	$102,788	6			
SF REHABILITATION PROGRAM-AHS	Baltimore City	2018	38	$838,830	34	4		
SF REHABILITATION PROGRAM-AHS	Calvert							
SF REHABILITATION PROGRAM-AHS	Caroline							
SF REHABILITATION PROGRAM-AHS	Carroll							
SF REHABILITATION PROGRAM-AHS	Cecil							
SF REHABILITATION PROGRAM-AHS	Charles							
SF REHABILITATION PROGRAM-AHS	Dorchester	2018	3	$131,088	2	1		
SF REHABILITATION PROGRAM-AHS	Frederick	2018	1	$12,530		1		
SF REHABILITATION PROGRAM-AHS	Garrett							
SF REHABILITATION PROGRAM-AHS	Harford							
SF REHABILITATION PROGRAM-AHS	Howard							
SF REHABILITATION PROGRAM-AHS	Kent							
SF REHABILITATION PROGRAM-AHS	Montgomery							
SF REHABILITATION PROGRAM-AHS	Prince George's	2018	14	$289,356	14			
SF REHABILITATION PROGRAM-AHS	Queen Anne's	2018	1	$24,500	1			
SF REHABILITATION PROGRAM-AHS	Somerset	2018	2	$26,050	2			
SF REHABILITATION PROGRAM-AHS	St. Mary's							

SF REHABILITATION PROGRAM-AHS	Talbot							
SF REHABILITATION PROGRAM-AHS	Washington							
SF REHABILITATION PROGRAM-AHS	Wicomico	2018	1	$41,000	1			
SF REHABILITATION PROGRAM-AHS	Worcester	2018	1	$13,400	1			
	SUBTOTAL		71	$1,564,192	64	7		

Special Loan Programs

(as of 06/30/18)

	FY18 Actuals $$	Units
Program:		
HIDP		
Bond	$1,687,818	
State	$834,649	17
Totals	$2,522,467	
Average Loan	$148,380	
MHFP (spot loans) see assumptions		
Group Homes (units = beds)		
Federal (HOME/SHOP)	$0	
State	$260,060	4
Totals	$260,060	
Loan Size per Bed - Total	$65,015	
Loan Size per Bed - State	$65,015	
MHRP	$3,671,364.00	96
Average Loan	$38,243	
IPP	$368,633	19
Average Loan	$19,402	
STAR	$1,178,172	9
Average Loan	$130,908	
MHRP Category Reporting	$5,604,189	186
Average Loan	$30,130	
Accessible Homes for Seniors	$1,564,192	71
Average Loan	$22,031	
Lead - State	$991,489	53
Average Loan	$18,707	
Lead - Baltimore City	$202,827	21
Average Loan	$9,658	
Lead - Healthy Homes 4 Healthy Kids #1	$498,194	35
Average Loan	$14,234	
STATE FUNDS	$8,391,408.00	316
FED (HOME) FUNDS	$1,178,172	9

MHRP + IPP + AHSP TOTAL	$5,604,189	186
LEAD TOTAL	$1,692,510	109
SPECIAL LOAN PROGRAMS	$7,296,699	295
GROUP HOME - STATE	$260,060	4
ALL SPECIAL LOANS PROGRAMS	$7,556,759	299
HIDP CLOSINGS - STAT	$834,649	17
ALL SPECIAL NEEDS ALLOC - STATE	$8,391,408	316
HOME/STAR TOTAL	$1,178,172	9
ALL SPECIAL NEEDS FUNDINGS	$9,569,580	325

Program	Units	Funding amount	G	L
AHSP	71	$1,564,192	64	7
MHRP	96	$3,671,364	42	54
Lead - State	53	$991,489	51	2
Lead- BCLI	21	$202,827	20	1
Healthy Homes for Healthy Kids	35	$498,194	35	0
STAR	9	$1,178,172	1	8
Ground Rent	0	$0	0	0
	304	$8,474,871	225	79

SEPTEMBER 6, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

September 6, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L.	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
MARTONICK, John P.	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

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GUESTS

Governor's Lead Commission Meeting Attendance Sheet

September 6, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Patrick T. Connor	Interest	
Bill Beach	HABC	
[illegible]	BCHD	
Ron Wineholt	AOBA	
Dauntory	AMA	
Lanawande Hei	MDE	
~~Clifford~~		
Rachel Hess Mutinda	MDH	
Ludeen McCartney Green	GAHI	
Jack Daniels	DHCD	jack.daniels2@maryland.gov

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, September 6, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
Strategic Planning Options
Other Old Business

III. New Business

Baltimore City CLPPP Fiscal Year Report	Camille Burke
Office of Childcare Annual Report	Manjula Paul

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, October 4, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
   A. Maryland Department of the Environment
   B. Maryland Department of Health
   C. Maryland Department of Housing and Community Development
   D. Baltimore City Health Department
   E. Baltimore City Department of Housing and Community Development
   F. Office of Childcare
   G. Maryland Insurance Administration
   H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
September 6 2018

APPROVED Minutes

Members in Attendance

Anna L. Davis, Mary Beth Haller (via phone) Susan Kleinhammer, Patricia McLaine, Cliff Mitchell, Paula Montgomery, Barbara Moore (via phone), Leonidas Newton, Manjula Paul, Christina Peusch

Members not in Attendance

Shana G. Boscak, Benita Cooper, John P. Martonick, John Scott, Adam Skolnik

Guests in Attendance

Camille Burke (BCHD), Patrick Connor (CONNOR), Jack Daniels (DHCD), Rachel Hess-Mutinda (MDH), Ludeen McCartney-Green (GHHI), Lisa Horne (MDH), Dawn Joy (AMA), Erin Paul (Arc), Bill Peach (HABC), Lan Van De He (MDE), Ron Wineholt (AOBA)

Welcome and Introductions

Pat McLaine called the meeting to order at 9:36 AM with welcome and introductions.

Approval of Minutes

A motion was made by Leon Newton, seconded by Anna Davis to accept the minutes as amended. Mary Beth Haller abstained, all other present Commissioners were in favor, and the minutes were approved.

Old Business

Strategic Planning – Paula Montgomery indicated that MDE has responsibility to pay for this because the Commission is housed by MDE. Staff from Horacio Tablada's office has suggested that the Commission consider doing a retreat as the Environmental Justice Commission did recently. Cliff Mitchell stated that the original reason for suggesting this was that the Commission now has a new set of resources, the number of children with higher levels of lead exposure is flattening out, and we have been doing more testing. What are the state's goals with regards to lead prevention? What is the big picture for lead poisoning prevention for the State of Maryland? Cliff Mitchell said he thinks the idea of a retreat is a great idea and believes facilitation would be good. He thought it would be helpful to have someone not on the Commission to help facilitate. MDH may also be able to identify some resources to help to pay for this. Paula Montgomery said she agrees that the idea of a retreat with a facilitator is a good one. Camille Burke noted that she chairs the Environmental Justice Commission and reported that the Commission went to Prince Georges County and spent time there with legislators. This gave the Commission the time to plan out the year ahead and refocus on what they were doing. It was also a chance to get to know the members of the Commission. Delegate Lam gave a presentation about how long it takes for a bill to become a law. Barb Moore noted that a lot has changed and having a day to regroup and refocus would help us to refocus our work. Talking about goals would be a great way to refocus efforts. Manjula Paul suggested that the Commission look at goals and objectives when the Commission was initially established to gauge how far we have come. Also to note how the agencies are working to decrease burden, to determine what more could be done, to determine how we might tap into additional resources. The new law with water testing is a big achievement. Universal testing is a great achievement. There are other things we might want to discuss that affect populations such as the spice awareness campaign,

Sue Kleinhammer asked if we thought legislation was important, would having the meeting in January be too late? Mary Beth Haller stated that she wasn't sure what difference it would make. We could have the meeting scheduled for December 6; we could do it January 10. Pet will poll the Commissioners regarding the proposed date (January 10). Paula Montgomery will check on options for the location. Meeting time will tentatively be 9-4:30. A planning committee was established composed of Susan Kleinhammer, Christina Peusch, Barbara Moore, Adam Skolnik, Cliff Mitchell, Anna Davis and Pat McLaine. The planning committee will attempt to meet by phone before the next Lead Commission meeting. Paula Montgomery will check procurement about how to do this and set up a budget. The Commission will not hold the January 2019 meeting on January 3, 2019. The focus of the retreat will be on projecting over-all goals for the State of Maryland for the next 5-10 years.

Legislation – Patrick Connor noted that at the April 5, 2018 meeting, the Commission approved Susan Kleinhammer's motion to begin planning legislation in August and asked if this has been done. The Commission will be starting discussion of legislation today. Patrick Connor asked if the Commission envisions changing their authority from EA6-8-10. After 24 years, should we explore the need for additional authority? Paula Montgomery stated that the authority for the Commission is pretty broad: evaluating existing law, preventing lead poisoning. The focus will be broad, long-term: where we need to focus to decrease incidence. Funding would be a part of it, especially if lower level for action drops to 5µg/dL. Maryland determined that it was illegal to offer liability insurance and so that protection was struck from the law. Anna Davis stated she thought it would be helpful to review where we are, look at continuing and reframing our goals.

Awards – Christina Peusch stated that she needs input from the group about awards to be given, possibly to childcare providers or to advocates. Mary Beth Haller will work with Christina to develop categories and criteria for an award. This will be discussed at the October meeting. Mary Beth Haller asked if the Commissioners could identify three categories of interest. Christina Peusch will give Pet Grant something to send out to members as soon as possible.

New Business

Fiscal Year Report for Baltimore City - Camille Burke presented Baltimore City's Childhood Lead Poisoning Prevention Fiscal Year Report. Copies were not available; Camille Burke will send the PowerPoints for the presentation to Pet Grant for distribution. Baltimore identified 297 children with a BLL in the 5-9µg/dL range and only 87 children with a blood lead of 10 and higher µg/dL. Camille Burke stated that paint sources were associated with 76% of cases; the previous year had been 96%. Commissioners asked if the numbers were the same for owner-occupied and rental properties. Paula Montgomery stated that 60% of cases living in owner-occupied properties are associated with paint, with pre-1950 housing being very common. Make-up accounts for a couple of percent and association with spices is growing. A recommendation was made to label the percentage of different sources on the source table. Camille indicated lead violations are being added to the housing system. CDC is now funding new outreach and Baltimore City has a new partnership with Moveable Feast focused on nutrition. Baltimore City is part of the Baltimore Education Research Consortium, focusing on early education data. National Childhood Lead Poisoning Prevention Week is October 21-27. Pat McLaine noted that the data shows a decrease in time to handle cases. Pet will send out the PowerPoint presentation to the Commissioners.

Office of Childcare Annual Report – Manjula Paul provided a Licensing Inspection Report for Lead Safety Violations, July 2017 to June 2018 from the Office of Childcare. The Office does not have a breakout for family child care homes that are rental or owner occupied and does not maintain information on age of construction in its database. Although the Commission has previously asked the Office of Childcare to provide this information, Manjula Paul stated the Office of Childcare is working on this but the information is not yet available. Paula Montgomery noted that all child care centers, commercial or residential, must follow lead regulations if they were constructed before 1978. The report notes a total of 39 citations associated with chipping and peeling paint or no lead certificate, with 10 facilities being closed (5 child care centers, 5 family/child care homes). Manjula Paul will find out and report back to the Commission on the ownership status and age of the 39 facilities with violations and the 10 facilities that were closed during the last fiscal year. Anna Davis asked who would get the citation – the OCC license holder only? If a rental, would the property owner also get a citation if the property was built before 1978 and there was no lead certificate? Can the owner be held responsible? Paula Montgomery indicated yes, adding that it is very rare for MDE to go into licensed child care that is rental and find the owner non-compliant. The Office of Childcare comes to MDE if there is a problem and MDE does follow up with the owner. With regards to what happens if the building was constructed pre-1978 and there is defective paint, an accredited individual does the repairs and a re-inspection is done by an accredited risk assessor. Paula Montgomery indicated that all rental residences built before 1978 with child care facilities must have a certificate. In a home, the area used for child care is approved – not the entire property. Office of Childcare issues an inspection report identifying where the defective paint is located. Susan Kleinhammer indicated there may be some confusion by the private sector inspector doing a re-inspection about what areas to re-inspect. Manjula Paul indicated that the floor plan for the licensed child care area is posted in the house. Many other areas ae assessed by licensed inspectors. Out of almost 6,000 licensed family child centers, two centers did not have the required lead certificate and one was closed. Out of 20 child care centers with peeling and chipping paint, 4 were closed. Manjula Paul noted that no children were identified with elevated lead levels as a result of their exposure in child care setting. It was suggested that "lead free" might be an option used to differentiate such older centers. Christina Peusch indicated that the

Office of Child Care Advisory group will also review the request for information on the age of housing.

Future Meeting Dates

The next Lead Commission Meeting is scheduled for Thursday, October 4, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment – nothing else to report

Maryland Department of Health – nothing else to report

Maryland Department of Housing and Community Development – nothing else to report

Baltimore City Health Department – nothing else to report

Baltimore City Housing and Community Development – nothing else to report

Office of Child Care – nothing else to report

Maryland Insurance Administration – no representative present

Public Comment

Ludeen McCartney-Green (GHHI) noted that the Baltimore Sun had published comments by Governor Hogan that he was on board with lowering the BLL from 10 to 5µg/dL and with universal screening. Anna Davis noted that the Commission's position on legislation was to lower the BLL to the reference level. The Commission's legislative subcommittee (Anna Davis, Adam Skolnik, Susan Kleinhammer, and Pat McLaine) will present draft language for a new bill at the Commission's October meeting. Ludeen McCartney-Green also noted that National Lead Poisoning Prevention Week is October 24th; GHHI will be meeting with advocates. Paula Montgomery said that her office will compile events for lead week and send out a calendar.

Adjournment

A motion was made by Anna Davis to adjourn the meeting, seconded by Leonidas Newton. The motion was approved unanimously and the meeting was adjourned at 11:38 AM.

MSDE Division of Early Childhood: Office of Child Care

OCC REGIONS	JURISDICTIONS	CHILD CARE CENTERS &Letter of Compliance	CAPACITY	FAMILY CARE & Large HOMES	CAPACITY
1	ANNE ARUNDEL	234	16,090	497	3,804
2	BALTIMORE CITY	308	15,474	541	4,160
3	BALTIMORE CO.	382	23,571	844	6,481
4	PRINCE GEORGE'S	390	23,651	813	6,350
5	MONTGOMERY	498	36,016	880	6,776
6	HOWARD	179	13,557	340	2,573
7	ALLEGANY	22	1,300	54	419
	GARRETT	14	562	18	133
	WASHINGTON	61	4,133	180	1,398
8	CAROLINE	10	404	76	585
	DORCHESTER	13	478	52	402
	KENT	7	259	18	148
	QUEEN ANNE'S	16	1,006	78	564
	TALBOT	18	1,089	39	301
9	SOMERSET	8	508	23	177
	WICOMICO	40	2,854	100	772
	WORCESTER	19	1,009	31	232
10	CALVERT	50	2,348	108	835
	CHARLES	72	4,603	208	1,564
	ST. MARY'S	39	1,898	184	1,378
11	CECIL	33	1,775	94	761
	HARFORD	89	6,088	286	2,259
12	FREDERICK	114	7,237	341	2,612
13	CARROLL	84	5,469	137	1,021
	TOTALS	Total Licensed 2,700	171,379	Total Licensed 5,942	45,705

09/05/2018

MSDE Division of Early Childhood: Office of Child Care

Licensing Inspection Report for Lead Safety Violation July 2017 to June 2018

County /City	CC Center	CC Center Citations	CC Center Citations	Family Child Care/Large Family	Family Child Care/Large Family Citations	Family Child Care/Large Family Citations	Total Citations	Enforcement Action Closed		
	Number Licensed (8/17)	Chipping and Peeling Paint	No lead Certificate	Number Licensed (8/17)	Chipping and Peeling Paint	No lead Certificate		CCC	FCC	Total
Baltimore City	308	10	1	541	9	0	20	5	1	6
Baltimore County	382	2	0	844	2	1	5	0	2	2
Calvert	50	1	0	108	2	0	1	0	0	0
Charles	72	1	0	208	0	0	3	0	1	1
Harford								0	1	1
Howard	179	2		340	0	0	2	0	0	0
Prince Georges	390	1	0	813	0	0	1	0	0	0
St. Mary's	39	3	0	184	3	0	6	0	0	0
Washington	61		1	180	0	0	1	0	0	0
Total		20	2		16	1	39	5	5	10

August 2017

Number of Licensed Child Care Centers: 2700

Number of Licensed Family & Large Child Care: 5942

09/05/2018

July 2017-June 2018

Lead Safety Violations Cited and Corrected: 39

Lead Safety Violations Enforcement Action: Closed 10

BALTIMORE
CITY HEALTH
DEPARTMENT

Childhood Lead Poisoning Prevention Program

Lead Commission September 2018

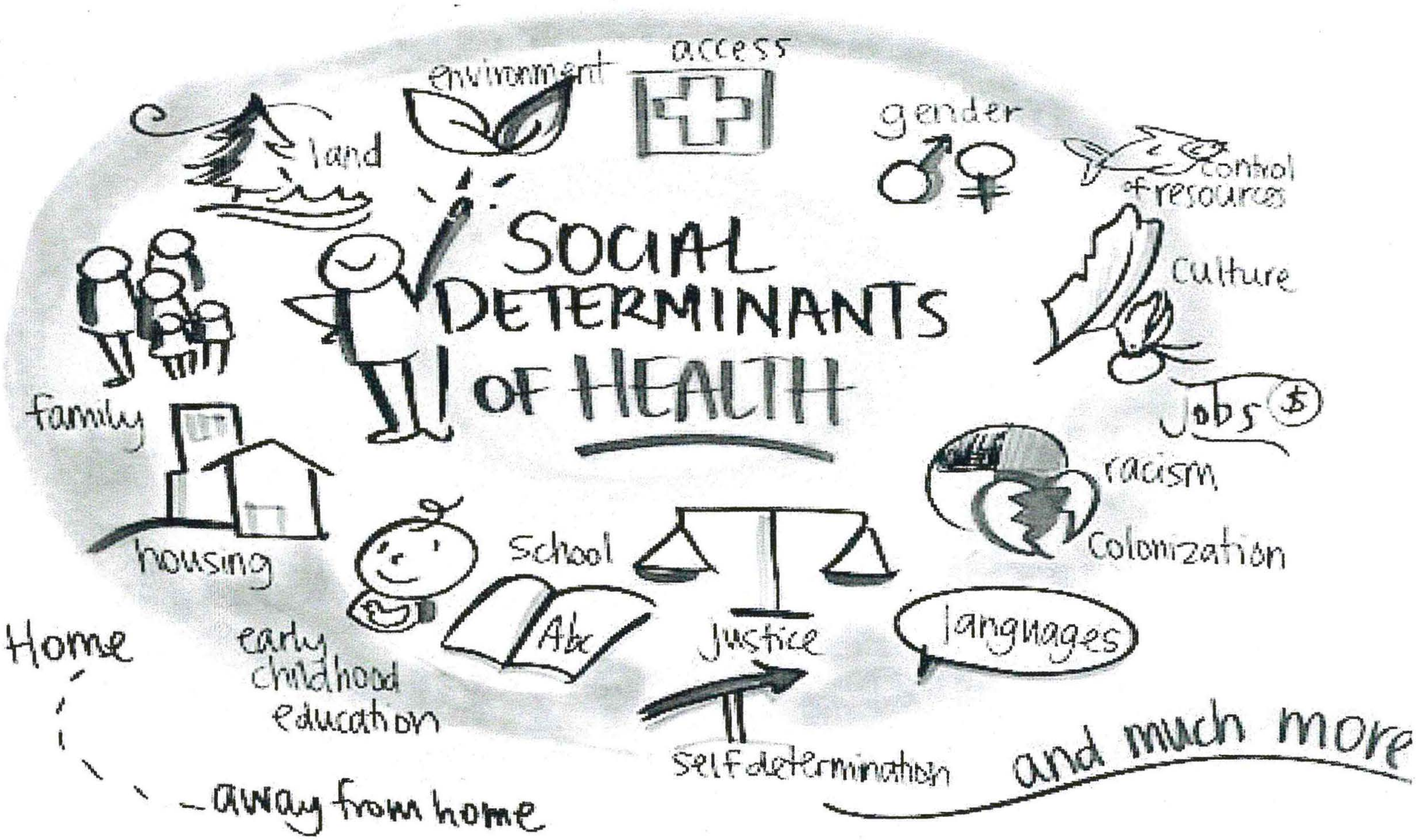
Catherine E. Pugh
Mayor, Baltimore City

Leana S. Wen, M.D., M.Sc.
Commissioner of Health, Baltimore City

@Bmore_Healthy
@DrLeanaWen
BaltimoreHealth

health.baltimorecity.gov

Social Determinants of Health



One Step Further............

Catherine E. Pugh
Mayor, Baltimore City

Leana S. Wen, M.D., M.Sc.
Commissioner of Health, Baltimore City

BALTIMORE CITY HEALTH DEPARTMENT

BALTIMORE CITY HEALTH DEPARTMENT

HEALTHY BALTIMORE 2020

- **Chronic Disease:** Chronic disease is the leading cause of death in Baltimore City. BCHD will launch a city-wide initiative that utilizes public-private sector partnerships to emphasize physical activity and nutrition. We will also continue to provide essential public health education through community health campaigns, and increase access to essential health services for our children through a cutting-edge school-based telemedicine pilot.
- HB 2020 priorities consist of the following:
  - 1. Move upstream to address root causes of chronic disease
  - 2. Expand the capacity of school-based health clinics
  - 3. Increase chronic disease awareness and enable health behavior change

Close the gap in child lead poisoning between Baltimore and rest of Maryland by 10%

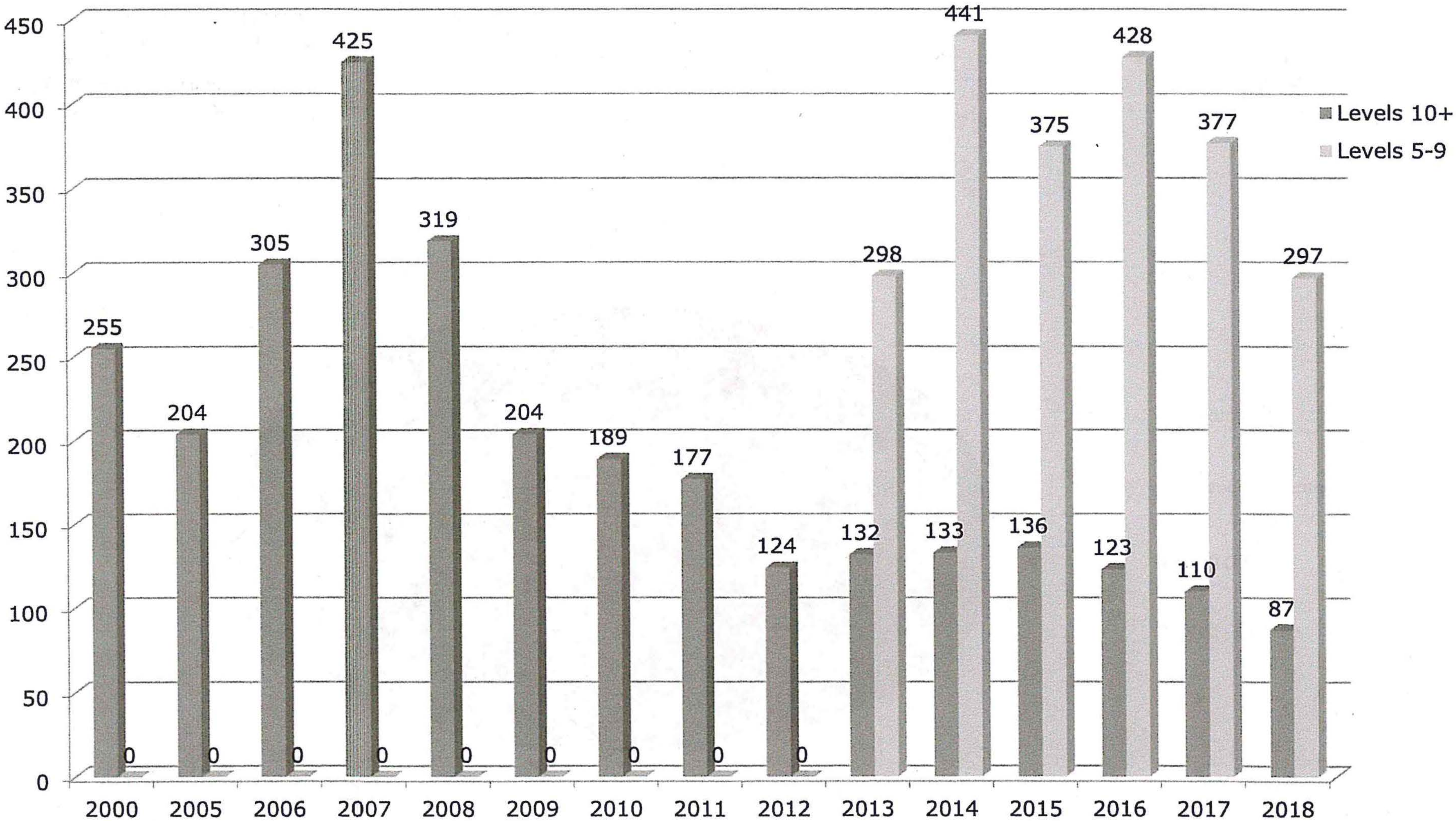
Visit Healthy Baltimore 2020 or hb2020

Catherine E. Pugh
Mayor, Baltimore City

Leana S. Wen, M.D., M.Sc.
Commissioner of Health, Baltimore City

BALTIMORE CITY HEALTH DEPARTMENT

Baltimore City Lead Poisoning Data by Fiscal Year



Catherine E. Pugh
Mayor, Baltimore City

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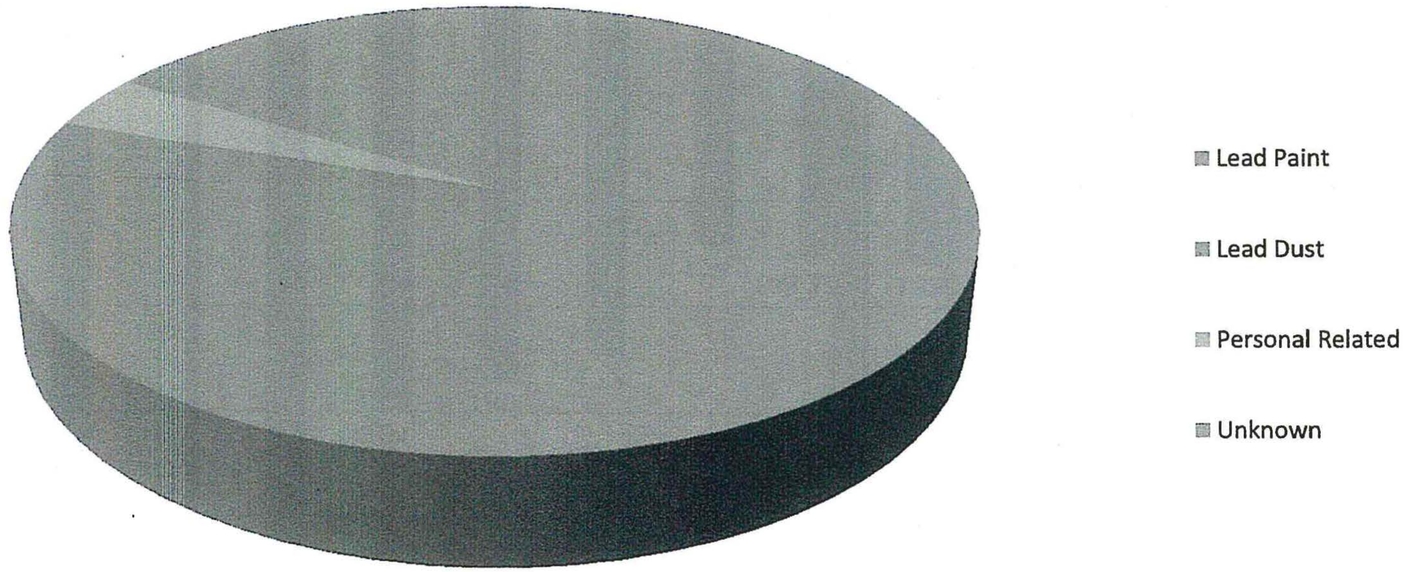
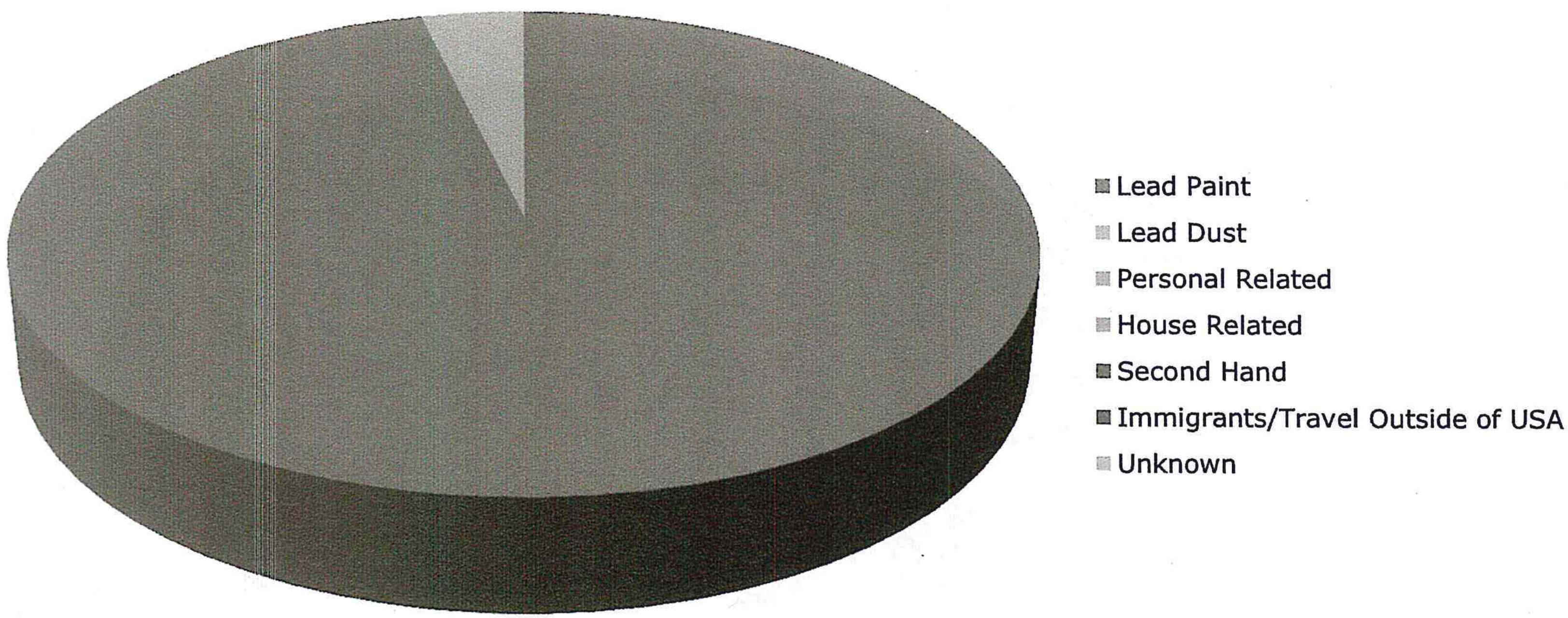
Commissioner of Health, Baltimore City

BALTIMORE CITY HEALTH DEPARTMENT

2017 Sources of Lead Poisoning for pre 1950 Owner occupied



2016 Sources of Lead Poisoning for pre 1950 Owner occupied

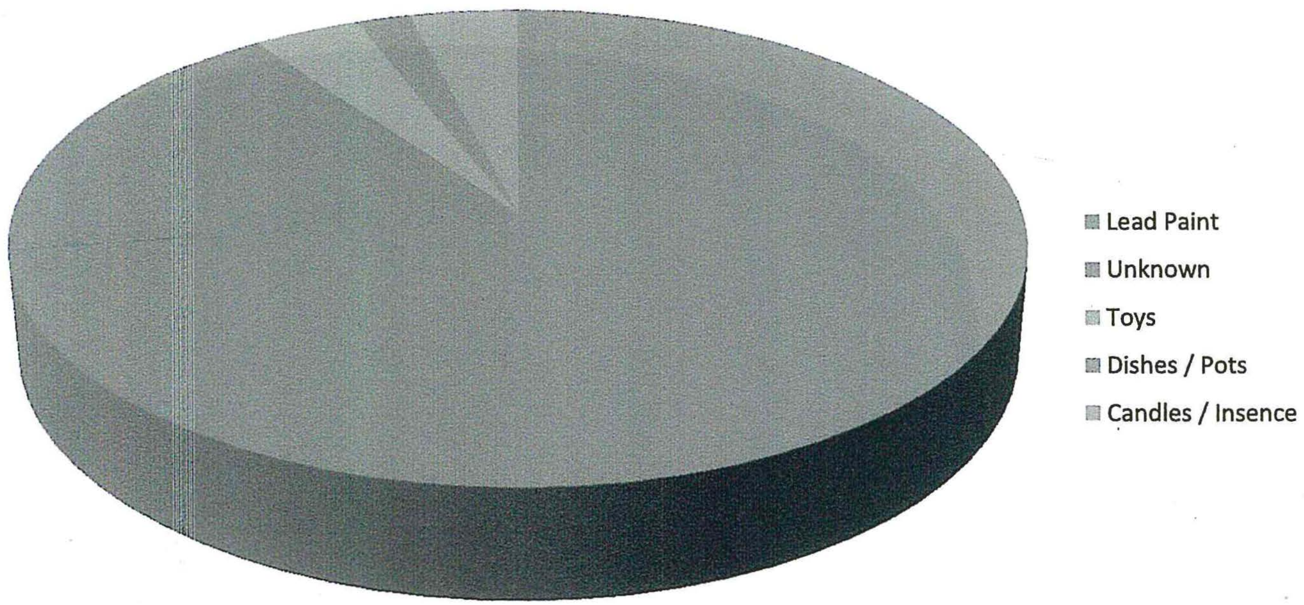


Catherine E. Pugh
Mayor, Baltimore City

Leana S. Wen, M.D., M.Sc.
Commissioner of Health, Baltimore City

BALTIMORE CITY HEALTH DEPARTMENT

2017 Sources of Lead Poisoning for pre 1978 MDE Registered Rentals



Catherine E. Pugh
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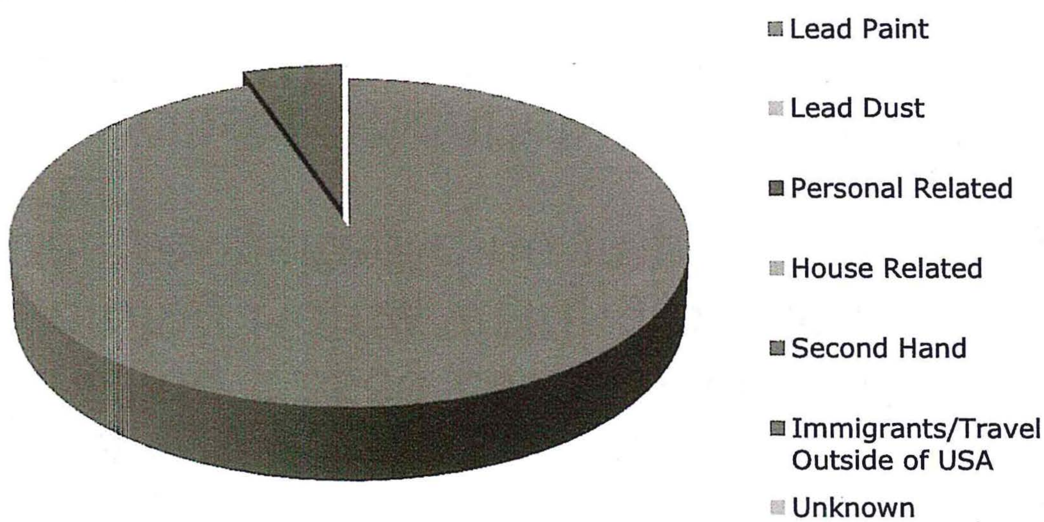
Commissioner of Health, Baltimore City

BALTIMORE CITY HEALTH DEPARTMENT

2016 Sources of Lead Poisoning for pre 1978 MDE Registered Rentals



QA Process changes

- Added 5-9's
- Reviewing 25% of cases referred
- Examining protocol, outreach efforts, outcome of outreach efforts, responses,etc.
- Examining the frequency in which the Notice of Defect is completed with the family as well as the EA-68
- Examining closed cases from prior quarter
- Examining Home visiting outcomes
- Issues re-visited if no improvement by following quarter
- Paying closer attention to those cases that convert to 10+…
  - Reasons
  - Interventions completed
  - Changes in household

Point of Care Testing

- Purchased several Lead Care II Analyzers & supplies
- FINALLY received license from MDH
- Began OCTOBER 2017
- **Primary Focus is administering follow up tests conducted in homes with BCHD clients.**
- Always want to drive parents & children back to Primary Care Physician
- Testing will be conducted at Health Fairs, Community Events and as needed
- Partnering with MCO's to increase testing-Reaching our to their non compliant clients

Moving Forward

- Hired New Attorney
  - Sharing with DHCD
  - Coordinating Outstanding Housing Violations with Lead Violations
- POC testing began in 2017.
  - We test monthly at the Esperanza Center in South Baltimore as well the Baltimore City Health Department Immunization Clinic
  - We test at Adventure Dental(both locations Mt. Clare Junction & Alameda
  - We tested at the Mayor's Back to School
- New Direction for MDE/CDC contract-Outreach Focused

Good Stuff.........

- POC testing began in 2017.
  - We test monthly at the Esperanza Center in South Baltimore as well the Baltimore City Health Department Immunization Clinic
  - We test at Adventure Dental(both locations Mt. Clare Junction & Alameda
  - We tested at the Mayor's Back to School
- We submitted All Outstanding Lead violations to the CHIP system form DHCD.
  - CHIP system contains data for housing violations, housing inspections, demolitions and planning.
- Potential Baltimore County Lead Poisoning Prevention Program & Baltimore City CLPPP partnership with Movable Feast along with our partners at Maryland Department of Health to possibly develop a menu, diet suggestions and possible cookbook for parents of children who have Lead Poisoning. A registered dietician on staff at Movable Feast would contribute and provide guidance.

Baltimore Education Research Consortium(BERC)
Early Education Data Collaborative(EEDC)

- Data Sharing Collaborative
  - Link data across agencies
  - Conduct research to help partners serve their target populations more effectively, including analyses of which families are not being served and both retrospective and longitudinal analyses of participants in their programs.
  - Assess the extent to which children and their families' needs are being met.
- Overarching goals
  - Examine the systems and structures and how they intersect with children and families;
  - Coordinate citywide focus groups with partner families interacting with multiple partner programs to impact action plans for all partners;

Baltimore Education Research Consortium
Early Education Data Collaborative

- Members include but are not limited to:
  - Baltimore City Department of Social Services
  - Baltimore City Health Department, Maternal and Child Health
  - Baltimore City Head Start
  - Baltimore City Infants and Toddlers Program (BITP)
  - Baltimore City Public School System
  - Baltimore Healthy Start, Inc.
  - Catholic Charities
  - Episcopal Community Services of Maryland – The Ark
  - Family League of Baltimore
  - Maternal and Infant Care Nurse Family Partnership
  - Maryland Family Network
  - St. Vincent De Paul
  - The Y of Central Maryland

2018 National Childhood Lead Poisoning Prevention Week

- October 21-27 2018
- Door to Door Community outreach West Baltimore
- October 25 2018 Conducting Gatherings at Gilmor Homes in Sandtown Winchester as well as testing
- October 27 2018 partnering with First Apostolic Faith Church Health Fair. Plan to test and disseminate information

(500-1000 attend each year)

Catherine E. Pugh
Mayor, Baltimore City

Leana S. Wen, M.D., M.Sc.
Commissioner of Health, Baltimore City

BALTIMORE CITY HEALTH DEPARTMENT

BALTIMORE
CITY HEALTH
DEPARTMENT

Thank you for your time!
Questions?

Camille E. Burke

Director Childhood Lead Poisoning Prevention Program

camille.burke@baltimorecity.gov

Catherine E. Pugh
Mayor, Baltimore City

Leana S. Wen, M.D., M.Sc.
Commissioner of Health, Baltimore City

@Bmore_Healthy
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BaltimoreHealth

health.baltimorecity.gov

OCTOBER 4, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

GUESTS

Governor's Lead Commission Meeting Attendance Sheet

October 4, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Ron Wineholt	AOBA	
C E Burke	BCIAD	
Lan VanDe Hei	MDE	
Christina Ardito	MDE	
Dawn Joy	AMA	
Chris White	Arc	
Ludeen Green	GHHI	
Jack Daniels	DHCD MD	jack.daniels2@maryland.gov
Lisa Horne	MDH.	

NOTICE

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SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

October 4, 2018

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COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L. ALD	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan SDK	Hazard ID Professional	
MARTONICK, John P. JPM	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia P McLaine	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee PM	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, October 4, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
Update on statewide lead testing of drinking water outlets in schools – MDE WMA
Strategic Planning
Legislation
Awards
Office of Child Care – additional information for last fiscal year
National Lead Poisoning Prevention Week
Other Old Business

III. New Business
Update on MDH Lead Screening — Cliff Mitchell

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, November 1, 2018, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
- A. Maryland Department of the Environment
- B. Maryland Department of Health
- C. Maryland Department of Housing and Community Development
- D. Baltimore City Health Department
- E. Baltimore City Department of Housing and Community Development
- F. Office of Childcare
- G. Maryland Insurance Administration
- H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
October 4, 2018

APPROVED Minutes

Members in Attendance

Anna L. Davis, Susan Kleinhammer, Patricia McLaine, Cliff Mitchell, Paula Montgomery
John Martonick, Leonidas Newton, Manjula Paul, Christina Peusch, Adam Skolnik

Members not in Attendance

Shana G. Boscak, Benita Cooper, Mary Beth Haller, Barbara Moore, John Scott

Guests in Attendance

Christina Ardito (MDE), Camille Burke (BCHD), Jack Daniels (DHCD), Ludeen Green (GHHI)
Lisa Horne (MDH), Dawn Joy (AMA), Lan Van De Hei (MDE) Chris White (Arc)
Ron Wineholt (AOBA)

Welcome and Introductions

Pat McLaine called the meeting to order at 9:40 AM with welcome and introductions.

Approval of Minutes

A motion was made by Cliff Mitchell, seconded by Adam Skolnik to accept the September 6, 2018 minutes as amended. Leon Newton abstained, all other present Commissioners were in favor and the minutes were approved.

New Business

Because of a scheduling conflict, Cliff Mitchell requested to provide the Maryland Department of Health update on Lead Screening early in the agenda. Official data is not yet available but preliminary review of data showed a significant increase in testing during Maryland's first full year of universal testing. Some jurisdictions with previously low testing rates (including Frederick, Carroll, Howard and Harford) appear to show significant (25-50%) increases in testing. There are still some counties where the opportunity to increase blood lead testing remains.

Old Business

Update on Statewide Lead Testing of School Drinking Water Outlets - Lan VanDe Hei and Christina Ardito from MDE's Water Supply Program provided an update on the status of lead testing in drinking water outlets in Maryland schools. As of September 28, 2018, MDE has received 22,327 lead results from 8 public systems and 89 non-public schools. Data for 87 samples was missing the known use. A total of 539 samples were above the 20ppb action level, 247 from drinking water outlets, the remainder from non-drinking water outlets.

MDE has received 743 applications for a 12-month deferral for testing to July 2019 and 714 of these requests were granted. Additionally, 117 schools applied for 3-year deferrals; 88 were denied and the remaining 29 are being reviewed. 129 schools requested to waive testing; MD is still reviewing these requests. Waivers are granted for three conditions: the school is using bottled water; the school has lead free plumbing and lead free service lines; and prior testing of all drinking water outlets indicated results of 5ppb or less. Lan E. VanDeHei indicated that not many schools qualify for the waiver. Drinking outlet is defined; sinks not being used for consumption must be clearly labeled. Some schools have tested other outlets such as chemistry labs, eye wash stations, bathrooms, but once testing has been done, the school must make test results available to the public. MDE did outreach to the counties and held trainings about the requirements of the law. Samples are collected by trained individuals; these persons are not necessarily accredited but may already be accredited for water sampling.

Paula Montgomery said she had received a letter from her child's school with a link to EPA that had data showing that consumption of water could be responsible for a large percentage of exposure. Christina Ardito indicated that Cliff Mitchell is working on a fact sheet on lead in drinking water. Ruth Ann Norton notes that a lot of information had been made available on this topic following exposures identified in Flint, Michigan. Pat McLaine offered to bring scientific articles to the Commission examining the relationship of consuming lead in drinking to average blood lead levels.

Water Supply will be making a report to the Governor with the Department of Education in December 2019 and can make a report back to the Commission in early 2019.

<u>Strategic Planning</u> – Paula Montgomery stated that so far, 11 commissioners have indicated to Pet Grant that they can come on January 10, 2019, the prospective date for the Lead Commission's Strategic Planning session. Pula has received quotes from two facilitators and is waiting to hear back confirmation of the date. Facilities being looked at include Oregon Ridge and Oakland Mansion in Columbia. Light breakfast and lunch will be provided. The meeting will be held from 9AM to 4PM. Paula Montgomery indicated she was not sure MDE could pay for lunch. This will be a public meeting and in accordance with the Open Meetings Act, Chapter 3(A), "the public has the right to observe deliberative process at open meetings."

Christina Peusch noted that this is our January meeting. It is a strategic planning process and the seats at the table are for Commissioners. Camille Burke stated that the great thing about having the public come is to let them know what you are doing. Paula Montgomery noted that the main purpose of the meeting is to have focus. John Martonick asked if there is a requirement to advertise the meeting. Pet Grant and Paula Montgomery will ensure that the meeting is posted appropriately. Adam Skolnik stated he will pay for food. Paula Montgomery stated she will convene the planning group before our next meeting in November. Ludeen McCartney-Green asked if there would be a report of the proceedings. Adam Skolnik noted that the goal is to get a full-scale strategic plan.

Legislation – Pat McLaine, Adam Skolnik, Anna Davis and Susan Kleinhammer held a conference call to look at the issue of legislation related to lowering the BLL of concern. The group reviewed the CDC guidance on testing, a summary of State Blood Lead Testing Laws published by CDC, bill language from 2018 (HB 304), proposed changes to HB 304 and came up with a list of six recommendations to be included in the 2019 legislation, distributed at the meeting. They are: (1)"A venous blood lead level greater than or equal to the reference level" should be used in statute to indicate lowering our level of concern; (2) Reference level should be defined (example: Reference Level means the 97.5th percentile of the National Health and Nutrition Examination Survey (NHANE's) blood lead distribution in children as determined by the Centers for Disease Control and Prevention (CDC) from time to time. The current published Reference Value (5 micrograms per deciliter) is based on NHANES data from 2007-2008 and 2009-2019. CDC will assess the Reference Value every 4 years using the two most recent NHANES surveys.); (3) There should be an Environmental Investigation for every child 6 or younger with a venous BLL of 5µg/dL or higher; (4) The **automatic** requirement for a modified risk reduction should not be tied to a 5µg/dL BLL; (5) Remediation requirements should be tied to the hazard(s) identified; (6) Requirements for remediation should apply to owner-occupied as well as rental properties. The group thought the term "Elevated blood lead level" should be kept in statute but tie new action to the reference level.

The question was raised: what is environmental investigation and who would do it. Environmental investigation is not in current law. Currently MDE and Baltimore City are providing environmental investigation in Maryland. Paula Montgomery stated that MDE needed to be given leeway about how to respond. In New Jersey, the General Assembly gave the program $11 million dollars to follow up on children with 5-9µg/dL BLLs. It is important for MDE to have resources needed to do this work. Paula Montgomery stated that when MDE is doing an environmental investigation, they may find other problems such as dust, water and other sources. Paula Montgomery stated that few modified risk reductions are ordered for cases with BLLs of 10µg/dL and higher, with the largest number of such properties being in Baltimore. Paula Montgomery stated that MDE has authority to order abatement of lead-based paint hazards in any property, owner occupied or rental or licensed childcare. But MDE does not have authority to order abatement of non-lead based paint hazards. A question was asked about whether soil and water would be included as lead-based paint hazards. Paula Montgomery indicated that local health departments have the authority to order abatements of such hazards. MDH is looking into the spice issue: there is lack of regulation by Federal Government (FDA) and many of the problem spices are being shipped in bulk. The Commission needs to know what is defined as a lead-based paint hazard and if soil is considered as one such hazard.

Younger families appear to be very receptive to not using leaded products identified in their homes (e.g., kohl and Surma) and also receptive to recommendations made by the local health department. Baltimore City Health Code also includes secondary residences where the child spends more than 50% of their time. Paula Montgomery stated that if the Commission wants this legislation to go through, it is important to remember that authority is under the Environment Article which only identifies lead-based paint hazards. MDE does not regulate non-LBP hazards.

Anna Davis stated that the Commission should continue discussion about other sources even though this may require a different bill. She asked MDE to identify the number of cases for which a modified risk reduction has been automatically triggered in affected properties with a BLL of 10µg/dL during the last 5 years. This will be very informative to addressing concerns about how this requirement has impacted property owners.

Lead Commission Special Recognition Awards – Christina Peusch passed out information with her ideas about the idea of the Commission providing awards to individuals. Categories to be included in the awards were discussed; ideas generated included local health department, property owner, child care provider, legislator, member of the public. Several commissioners commented favorably on the draft award including use of an outline of the state with Maryland flag design. Commissioners were asked to get their feedback to Christina Peusch; the Commission will review this topic again in December 2019.

Office of Childcare – Additional Data for last fiscal year – Manjula Paul distributed additional information requested by the Commission – ownership, age of construction and water supply type for the Family Child Care facilities with Safety Violations (N=16) and Closures (N=5) in FY 2017. With regards to citations only, 9 out of 17 of the houses were built before 1950, 15 out of 16 were owner-occupied, and 12 were on public water supply, 3 used bottled water and 1 had well water. With regards to facilities closed as a result of lead violations: 1 out of 4 of the houses were built before 1950, 3 out of 5 were owner-occupied, and all 5 were on public water supply. Manjula Paul noted that Maryland had 5,942 licensed family childcare homes in FY 2017.

National Lead Poisoning Prevention Week – An activity sheet for Baltimore City was distributed. Paula Montgomery reported that MDE will hold a press event on October 22nd and will release the 2017 Annual Report. Paula Montgomery stated she has not yet compiled the list of other activities across the state but MDE will release this later. GHHI is also finalizing a list with a main event on Wednesday, October 24. Camille Burke noted that the focus for BCHD is testing. The Health Departments has emailed child care centers and is trying to be proactive to reach younger children and their families. Paula Montgomery noted that many local health department staff have not been funded for lead activities for many years so this makes it difficult to organize events.

Future Meeting Dates

The next Lead Commission Meeting is scheduled for Thursday, November 1, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment – nothing else to report

Maryland Department of Health – nothing else to report

Maryland Department of Housing and Community Development – nothing to report

Baltimore City Health Department – Mary Beth Haller has been appointed to serve as interim Health Commissioner, starting on October 13, 2018. The search for a Health Commissioner is open.

Baltimore City Housing and Community Development – nothing to report

Office of Child Care – nothing else to report

Maryland Insurance Administration – no representative present

Public Comment
Ludeen McCartney-Green stated that GHHI will be hosting a Lead Symposium on October 24 to talk about the past, present and future of lead poisoning in Baltimore City.

Adjournment
A motion was made by Christina Peusch to adjourn the meeting, seconded by Anna Davis. The motion was approved unanimously and the meeting was adjourned at 11:32 AM.

Lead Poisoning Prevention Commission

History and Charge

The Lead Poisoning Prevention Commission was created by statute in 1994 (Chapter 114, Acts of 1994). The Commission studies and collects information on the effectiveness of the Lead Poisoning Prevention Program and current risk reduction treatments in reducing exposure to lead as well as risk and liability issues including availability of insurance. (Environment Article, Secs. 6-801, 6-848)

Award or Recognition

1. Outstanding Child Health/Environmental Advocate Award

2. Outstanding Advocate

3. Special Recognition Award

Rubric or criteria to align with mission and goals: See above and could add:

a. Demonstrates effective advocacy and education for public good
b. Shared Vision of No safe blood level
c. Prevention is key to success

Nomination process discussed:

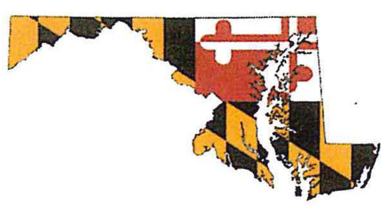
a. Commissioners recommendations
b. Must be submitted in written format and be received by first Thursday in August annually
c. Vote with majority rule by first Thursday in September annually
d. Chair contacts recipient by September 30th annually
e. Presentation during National Lead Poisoning Prevention Week annually
f. Share via media - ideas

2019

SPECIAL RECOGNITION

AWARD

THIS AWARD IS GRANTED TO AN INDIVIDUAL, AGENCY OR ORGANIZATION FOR THEIR OUTSTANDING SUPPORT, EFFORTS AND DEDICATION TO ADVANCING THE GOALS OF THE LEAD POISONING PREVENTION COMMISSION TO REDUCE EXPOSURE TO LEAD, RAISE AWARENESS FOR PREVENTION AND PROTECT CHILDREN



MARYLAND LEAD POISONING PREVENTION COMMISSION

BALTIMORE
CITY HEALTH
DEPARTMENT

Baltimore City Health Department – Healthy Homes

National Childhood Lead Poisoning Prevention Week of October 22-27 2018

Date	Time & Details	Event
Monday October 22, 2018	Neighborhood Canvas of Gilmor Homes & Sandtown Winchester 10am-2pm	The Childhood Lead Poisoning Prevention Staff will engage in Community Outreach to 21217 in West Baltimore for several blocks. We will be distributing Healthy Homes information, Lead Prevention information. We will also highlight the importance of Lead Testing in children. We will actively engage community residents.
Tuesday October 23,2018	Gathering and Point of Care Testing at **Dayspring Head Start** location to be determined.	During our presentations we will be highlighting the importance of a healthy home, the components of a healthy home, identifying potential lead hazards and highlighting the importance of Lead Testing in children. We will engage parents, grandparent, guardians and facility staff
Wednesday October 24, 2018	Gathering and Point of Care Testing at **Catholic Charities Head Start** at 1501 N. Dukeland St. 21216	During our presentations we will be highlighting the importance of a healthy home, the components of a healthy home, identifying potential lead hazards and highlighting the importance of Lead Testing in children. We will engage parents, grandparent, guardians and facility staff
Thursday October 25 2018	Gilmor Homes Community Health Fair at Gilmor Homes Community Center located 1515 Vincent Court, 21217 12pm-5pm	Community Health Fair that will include MCO's, a host of community organizations, City & State agencies, and the JOBS Plus Program at Gilmor Homes. We will also be testing youth at this event.
Friday October 26 2018	Gathering at **Catholic Charities Head Start-** Sethlow Location located at the South Baltimore Child Development Center 2707 Sethlow Road,21223	During our presentations we will be highlighting the importance of a healthy home, the components of a healthy home, identifying potential lead hazards and highlighting the importance of Lead Testing in children. We will engage parents, grandparent, guardians and facility staff
Saturday October 27, 2018	Community Health Fair 11am-4pm	Community Health Fair that will include MCO's, a host of community organizations, City & State agencies at First Apostolic Faith Church located at 27 S. Caroline Street 21231. This Community event touches 500-750 participants. We will also be testing youth at this event.

A gathering is Healthy Homes Party which occurs is a small setting of parent, grandparents, guardians and facility staff.

Family Child Care Lead Safety Violation Report July 2017-June 2018

Family Child Care Cited for Lead Non -Compliance: 16
Family Child Care closed for Lead Non Compliance: 5

Regions		Year Built		Operation Type		Water Supply		
Cited	Total Number	Pre 1950	1951 to 1978	Owner	Renter	Public	Bottle	Well
Baltimore City	9	9	x	9	x	6	3	x
Baltimore County	2	x	2	1	1	2	x	x
Southern Maryland	5	0	5	5	x	4	x	1
Total	16	**9**	**7**	**15**	**1**	**12**	**3**	**1**
Closed	Total Number	Pre 1950	1951 to 1978	Owner Operated	Renter Operated	Public Water	Bottle Water	Well Water
Baltimore City	1	1	x	x	1	1	x	x
Baltimore County	2	x	2	1	1	2	x	x
Charles County	1	x	1	1	x	1	x	x
Harford County	1	x	1	1	x	1	x	x
Total	5	**1**	**4**	**3**	**2**	**5**	**x**	**x**

Citations: 16 : Pre 1950 -9, 1951-1978- 6 **Owner-15, Renter-1** Public Water 12, Bottle water 3, Well Water 1

Closed: 5 : Pre1950 -1, 1951-1978-4 **Owner 3, Renter 2** Public Water- 5

MSDE OCC 10-4-2018

Recommendations for 2019 Legislation

1) "A venous blood lead level greater than or equal to the reference level " should be used in statute to indicate lowering our level of concern
2) Reference level should be defined: Reference Level – means the 97.5th percentile of the National Health and Nutrition Examination Survey's (NHANE's) blood lead distribution in children as determined by the Centers for Disease Control and Prevention (CDC) from time to time. The current published Reference Value (5 micrograms per deciliter) is based on NHANES data from 2007-2008 and 2009-2010. CDC will assess the Reference Value every 4 years using the two most recent NHANES surveys.
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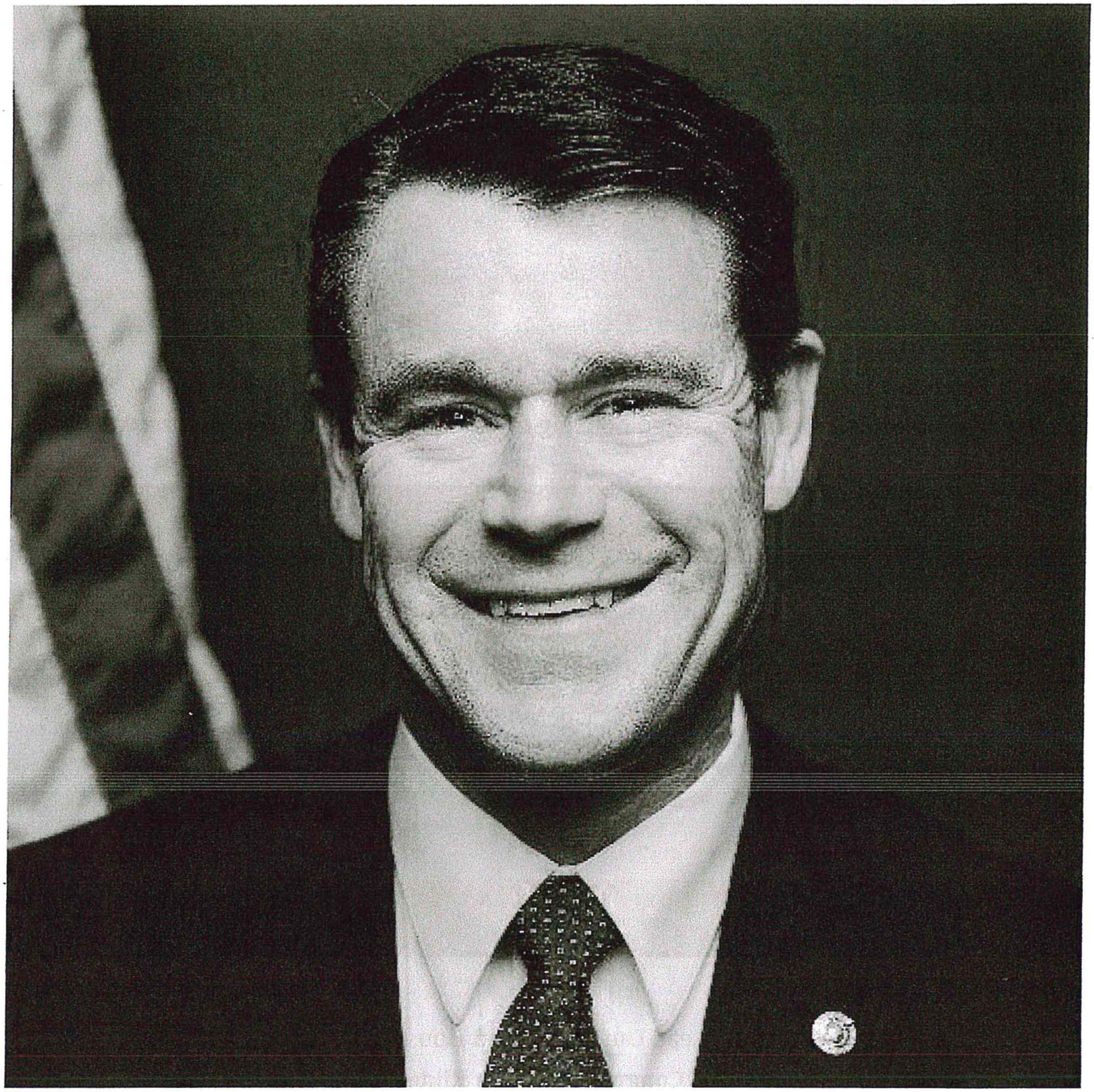
https://www.nwitimes.com/news/local/lake/locals-applaud-u-s-sen-todd-young-s-bill-protecting/article_a8a6160c-d369-521b-83a0-590e129ea9f2.html

Locals applaud U.S. Sen. Todd Young's bill protecting children from lead in drinking water

Lauren Cross lauren.cross@nwi.com, 219-933-3206 Oct 1, 2018 Updated 5 hrs ago



U.S. Sen. Todd Young (R-Ind)

Provided

TownNews.com Content Exchange

Local advocates are applauding U.S. Sen. Todd Young's bipartisan legislation aimed at protecting families in federally assisted housing from lead-contaminated drinking water.

Young is sponsoring the "Get the Lead Out of Assisted Housing Act of 2018" alongside Sen. Tammy Duckworth, D-Illinois, and Congressman Dan Kildee, D-Michigan.

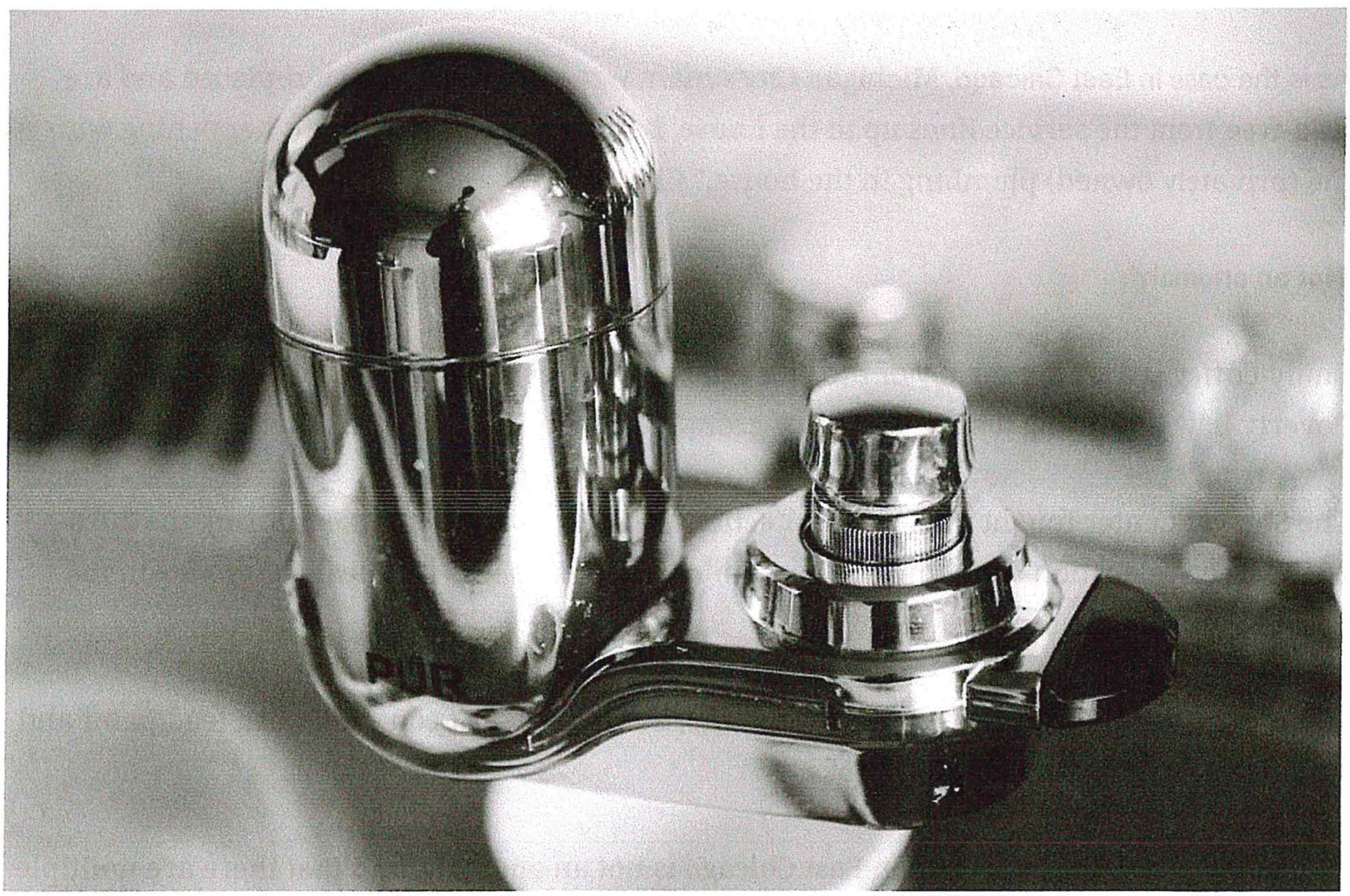
The proposal requires the U.S. Department of Housing and Urban Development to inspect for lead service lines, creates a grant program and allows a cross-check for lead in water when remediating homes for lead paint.

"No one should have to worry about the safety of their drinking water, but families are facing the threat of lead contamination in their homes and communities," Young said.

While lead paint is believed to be the biggest culprit behind elevated blood lead levels in children, drinking water is considered a hidden danger in older cities with aging lead service lines — East Chicago, Hammond, Gary, Michigan City included.

In testing for soil contamination in the USS Lead Superfund site in East Chicago, the U.S. Environmental Protection Agency also discovered elevated lead levels in homes.

The discovery prompted the city to seek financing through the state to replace privately owned lead service lines in hundreds of homes in the Superfund site — the first of its kind of program in Indiana.



The Environmental Protection Agency provided water filters in 2017 to families in East Chicago where elevated lead levels were discovered in their drinking water.

John J. Watkins, The Times

Cross-checking for paint, water lines

If approved, the federal legislation would require recipients of HUD's lead paint hazard reduction grants to also cross-check for lead water lines.

The program would include testing, notification and controlling for lead in drinking water.

That's great news for people like Michigan City School Board member Deborah Chubb, who serves on the mayor's exploratory Committee on Lead, created in recent years once Michigan City discovered its alarming high rate of lead-poisoned children.

The committee recently applied for HUD's hazard reduction grant this year in hopes of tackling exposures in homes.

"It would be an enormous benefit to homeowners if we were be able to, at the same time, evaluate any lead issues concerning lead service lines and plumbing in the house," Chubb said. "And maybe it would give people some peace of mind."

As is the case in East Chicago, Michigan City's main water lines have been replaced and are lead-free from the service lines up to the house, but "nobody knows what's happening with the (privately owned) plumbing in the house," Chubb said.

'Not an anomaly'

Emily Coffey is a staff attorney of the Chicago-based Sargent Shriver National Center on Poverty Law, a housing justice watchdog group instrumental in the East Chicago lead crisis.

The Shriver Center fought to secure protections for East Chicago families' during the 2016-2017 forced relocation from the lead-contaminated West Calumet Housing Complex in the East Chicago Superfund site.

Soil is considered the greatest threat at the site, but indoor dust contaminants, lead paint and water are also considered health risks.

"We know that what happened in East Chicago is not an anomaly, and that there are multiple pathways for exposure. And so it's essential that we have legislation that is going to look at all potential sources and make sure we are addressing those hazards before they harm a child," Coffey said.

The Shriver Center has been pushing HUD for years to change its rules and regulations so the federal agency can do more to prevent children from being poisoned in federally assisted housing.

The bill ensures HUD has the authority it needs to address lead contamination from water, air or industrial sources.

"With this bill, if a child is identified with an elevated blood lead level, the inspection takes all potential sources of lead into account. It's not just looking at paint or one individual source," Coffey said. "Everybody deserves the right to safe drinking water and everybody should have the ability to presume the water coming out of the faucet isn't going to permanently damage their children."

The bill would also create a "Healthy Homes Lead in Drinking Water Grant" pilot program to provide grants to states and local governments.

"These funds would be used to identify the threats posed by lead in drinking water and take steps to protect residents. Activities under this grant program include creating a lead service line inventory, testing for lead in the drinking water at child care centers and schools, testing for lead at public facilities like public water fountains and remediation," according to a Young news release.

This article originally ran on nwitimes.com.


S.

A BILL

Get the Lead Out of Assisted Housing Act of 2018.pdf
Updated 5 hrs ago

Elderly man dies after pickup rolls into ditch near Michigan City

NOVEMBER 1, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

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SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

November 1, 2018

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SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

GUESTS

Governor's Lead Commission Meeting Attendance Sheet

November 1, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Dau Fey	AMA	
Bill Peach	HABC	
Ron Wineholt	AOBA	
Madeleine O'Neill	GHHI	moneill@GHHI.org
Shante Branch	MDE	Shante.Branch@maryland.gov
Elizabeth Heetz	MDH	elizabeth.heetz@maryland.gov
Romarius Longmire	MDH	rlongmi1@jhu.edu
Jack Daniels	DHCD (MD)	jack.daniels2@maryland.gov
Shenelsa Frasier-Kyer	DHCD Housing	shenelsa.frasier-kyer@baltimorecity.gov
Ludien Green	GHHI	lgreen@ghhi.org
Ashley Lane	PGHD	avlane@co.pg.md.us
Yasmine Harding	PGHD	yaharding@co.pg.md.us
Amanda Breon	PGHD	asbreon@co.pg.md.us
Ali' Golshiri	PGHD	

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, November 1, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
Update on Strategic Planning Meeting – January 10, 2019
Report on National Lead Poisoning Prevention Week
Other Old Business

III. New Business
MDE Childhood Lead Registry Report – Annual Review
DHCD 1st Quarter Update

IV. Future Meeting Dates: The next Lead Commission Meeting is scheduled for Thursday, December 6, 2018, at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

V. Agency Updates
   A. Maryland Department of the Environment
   B. Maryland Department of Health
   C. Maryland Department of Housing and Community Development
   D. Baltimore City Health Department
   E. Baltimore City Department of Housing and Community Development
   F. Office of Childcare
   G. Maryland Insurance Administration
   H. Other Agencies

VI. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
November 1, 2018

APPROVED Minutes

Members in Attendance
Anna L. Davis, Susan Kleinhammer, Cliff Mitchell, Paula Montgomery, Barbara Moore, Manjula Paul, Christina Peusch, Adam Skolnik

Members not in Attendance
Shana G. Boscak, Benita Cooper, Mary Beth Haller, John Martonick, Patricia McLaine, Leonidas Newton, John Scott

Guests in Attendance
Shante Branch (MDE), Amanda Breon (PGHD), Camille Burke (BCHD), Jack Daniels (DHCD), Sheneka Frasier-Kyer (BC DHCD), Ludeen Green (GHHI), Ali Golshiri (PGHD), Yasmine Harding (PGHD), Elizabeth Heitz (MDH), Dawn Joy (AMA), Ezatollah Keyvan-Larijani (MDE) Ashley Lane (PGHD), Romarius Longmire (MDH), Bill Peach (HABC), Madeleine O'Neill (GHHI), Chris White (Arc) Ron Wineholt (AOBA)

Welcome and Introductions
Adam Skolnik called the meeting to order at 9:43AM with welcome and introductions.

Approval of Minutes
There was not a quorum at the start of the meeting. Approval of the October meeting minutes was postponed until 10:41 am. At that time, a motion was made by Christina Peusch, seconded by Susan Kleinhammer, to accept the October 4, 2018 minutes as amended. Mary Beth Haller abstained as she was not present at the October meeting; all other Commissioners in attendance approved the minutes.

Old Business

Strategic Planning Meeting – Paula has secured a location and the facilitator for the Commission's strategic planning meeting on January 10' 2019. Paula met with Secretary Gumbles and Deputy Secretary Tablada, who agreed that the meeting should be open to the public. Paula suggested and the Commissioners agreed that we will ask the public to RSVP due to limited seating and ordering food. An email will be sent in December to the Commissioners and all interested parties. The Commission will not meet in January on the regularly scheduled 1st Thursday of the month; rather the strategic planning session on the 10th will take the place of the usual meeting. Secretary Grumbles and Deputy Secretary Tablada will attend. The planning committee for the meeting has not met yet, but will do so soon. Adam Skolnik said the facilitator will send out a survey to Commission members, as well as any interested parties, to ask for their thoughts on agenda items. The facilitator is Russ Webb– he will be in touch with Secretary Grumbles and develop an agenda. Webb will advise on how best to incorporate public input. Paula clarified that Adam Skolnik volunteered to provide lunch. Christina Peusch volunteered to provide a continental breakfast.

Report on National Lead Poisoning Prevention Week – Before turning it over to Camille Burke and GHHI to report on the activities for National Lead Poisoning Prevention week, Paula Montgomery noted that MDE issued a press release and an annual report. MDE attended events for Prevention Week and coordinated with partners, but did not host events. Camille Burke reported that BCHD spent the week in the community focusing on West Baltimore and Sandtown/Winchester. They tested a lot of people. She noted that they ended up focusing much of the attention regarding education and prevention to the adults based on many of the conversations they had with people in the neighborhoods. BCHD literally walked the neighborhood and knocked on doors. They also hosted a health fair and had a film crew following them. Ludeen Green attended a summit, which was a week-long event. The U of MD hosted an event in PG County. The lead symposium was a big event. Ludeen Green reported that a number of elected officials attended the symposium during which a robust policy discussion took place. There were a number of new community health workers in field who attended as well. Cliff Mitchell asked whether PG County did any other events. The only event sponsored by the county was the symposium.

New Business

MDE Childhood Lead Registry Report – Annual Review – Childhood blood lead surveillance in Maryland. Paula Montgomery presented the MDE Annual Report 2017 Medical and Environmental Case Management. She noted that the data in this report is multidimensional and complicated. It was a monumental effort by the Department that she wanted to note that this was the result of much hard work and effort on the part of so many people that she wanted to take a moment and express her appreciation to everyone who put it together. At the outset, she noted one correction in the report: page 32 the prevalence and incidence columns/numbers are switched.

Paula Montgomery then proceeded to report on the Case Management aspect of the report. The highlights of the surveillance report are that 143,200 children 0-18 years of age were tested in 2017. The total number of blood test results reported to the CLR was 151,206. In CY 2016, the Department began comprehensively tracking sources of lead exposure in children. While lead based paint is still the most frequent source, it should be noted that a significant number of children aged 0-72 months identified with an elevated BLL of ≥10 μg/dL may have been exposed from other sources, including cosmetics and spices.

There are 4 staff members in health surveillance. The hard copy reports of POC testing in 2017 increased to 35.8% of these results, up from 23.2% in 2016. POC testing results in more hard copy reports submitted by clinics and the staff have to physically check to make sure there are no duplicates and then manually enter the data. Paula estimated that this translated to about 45,000 pieces of paper that the staff had to work with. She also noted that, in addition, the electronic information has to be reviewed for accuracy as well.

The statewide average number of children aged 0-72 months tested for lead has increased from CY 2010 – 2015 when it was 110,706. In CY 2016 testing was 17.8% higher than the historical average. The number increased again in CY 2017 and was 19.1% higher than the 2010-2015 average at 131,832 children tested.

Blood lead testing of children 0-72 months increased by more than 19% compared to CY 2015 when universal testing was not in place. Despite increased numbers of children tested, the number of children with blood lead levels ≥10 µg/dL increased by less than 3% while the number of children with blood lead levels 5-9 µg/dL decreased by 7.1%, compared to 2015. Paula Montgomery said that this was not a result they were expecting to see and that what is a particularly interesting finding is that the numbers of kids identified decreased in Baltimore City but increased in the counties, which is in large part due to the excellent work of Camille Burke and the BCHD.

Last year MDE began the comprehensive tracking of the sources of lead exposure, including other sources than lead paint. Knowing all the potential sources is an important factor in case management and prevention efforts. Cliff Mitchell stated that the MDE case management guidelines is for 10 µg/dL and above, while the state uses 5 µg/dL and above. The CDC grant to Baltimore City to go out to investigate on cases for 5-9 µg/dL is a very successful program, but unfortunately there is no more funding for that. MDE goes out for 10 µg/dL. MDE follows the questionnaire similar to what HUD uses, but asks additional questions, including questions about other sources of exposure that otherwise might not be addressed.

There were 81 confirmed cases in Baltimore City in CY 2017, which is an amazing accomplishment especially while testing is relatively consistent. They have consistently gone lower and lower and are now at 0.9%, which is the lowest level in history.

The confirmed cases in CY 2017 in Baltimore City were still mostly in rental housing rather than in owner-occupied housing. In those 81 cases in Baltimore City, 55 of them (67.9%) were in pre 1950 rental occupied. There were none in 1950-1977 (Baltimore City doesn't have many of these properties) and 2 in post -1977.

Regarding case management outcomes, Baltimore City completed 90% of medical home visits. Paula Montgomery noted that Baltimore City does all its own medical management and environmental investigations and that no other jurisdiction has that completion rate.

The data on lead sources held no surprises. In pre-1950 rental housing the source was lead based paint in 67% of the cases. 11% were from jewelry, toys, etc. and 22% were other sources/unable to determine. In owner-occupied housing, 79% of the sources were from lead paint, 4% from lead dust, and 17% were other/unable to determine.

In the counties, of the 260 confirmed cases during CY 2017, 179 were directly related to universal testing. The 19% increase in testing was significant in the counties. In these confirmed cases, 81 were found in 1950-77 rental properties. In post-1977 rental properties, there were 18 cases, which should not be because there is supposedly no lead paint in those properties. Adam Skolnik noted that MDE includes the confirmed cases in the housing numbers even when it is determined that the source is not from lead paint, but from another source of lead exposure. There was a brief discussion about the various agency authority and protocols depending on what type of property it is. Paula Montgomery reiterated the definition of a rental property and said that if it is determined that a lead poisoning problem exists on that property, the state has the authority to investigate and take action. But the state does not have the same authority if it is an owner-occupied property. The definition for DHCD is different – for the purposes of receiving funding, if the owner is not in the property, it is considered rental and the occupant can receive services. Cliff Mitchell said that MDE and DHCD look to see whose name is on the lease and who has decision making authority. It was pointed out that DHCD has no enforcement authority; they only process applications to give funds to the person who owns the property. DHCD only leveraging funds and can't force a family to come to them to get funds for abatement. If the property is pre-1978, it must be registered with MDE. If they are not registered, the property is not legally offered for rent. But, it was stressed that in terms of the child being treated, nothing changes from a case management perspective. Susan Kleinhammer asked about dormitories and how do dorms differ from a rooming house? Mary Beth Haller asked about grandchildren living in a house that maybe a grandparent owned who is now deceased and so the property is not officially a rental. Cliff Mitchell answered that such a case is exactly the situation that the new Medicaid program was created for, although he underscored that the deed should and must be switched. Paula Montgomery suggested that this is an area in which we may want to push for greater compliance.

Returning to the Annual Report, of the lead sources identified in all jurisdictions other than Baltimore City, in pre-1950 rental housing 44% was due to lead paint, 38% to lead dust. Lead paint hazards are still statistically relevant in the housing stock. In post – 1978 rental housing, spices and cosmetics are the main culprits and these are from recent arrivals and families with recent travel outside US. There were only 21 of those cases. The bulk of the cases are in 1950-77 rental housing, where only 2% of the cases were due to lead paint. 98% of those cases were from other sources of lead. The numbers in Prince Georges County were significant and were thought to be due mostly to the use of surma. One of the representatives from PG County said that environmental sources should not be ruled out and that these cases are due to a combination of sources. Ron Wineholt asked whether the 179 cases correlated to the pie chart shown and the breakdown of sources. Paula Montgomery clarified that the pie chart took into account that there could be multiple sources that would feed into the 179 cases. She also noted that unable to determine (UD) does not relate to a refusal to allow inspection and that MDE never uses UD unless an inspection was completed. Baltimore City clarified that UD also means that the child could be in multiple locations, too – grandparents' house, child care, etc., and that UD just means that we can't know for sure the source of exposure.

Adam Skolnik asked for clarification on Table 2 on page 5 of the report. With regard to BLL above 10, the total number of new cases is 305, whereas the total incidence is 388. Paula Montgomery explained that the 388 is the combination of new and old cases. There were 305 new cases and 83 old cases; new cases were counted as anyone with ≥10 μg/dL and that old cases were children who may have carried from CY 2016 or had a blood test with ≥10 μg/dL in a previous year.

Finally, Paula Montgomery pointed out the post-1978 high numbers of cases due to spices, which represents imported spices brought into country by people themselves or found in specialty stores. These are coming mostly from the Indian subcontinent and are in chili or turmeric.

Paula Montgomery concluded her presentation at approximately 10:35.

MDE Lead Poisoning Prevention Progarm Statewide Childhood Lead Registry Annual Report. The Annual Report to the Commission was made by Dr. Ezatollah Keyvan-Larijani.

In CY 2017 over 143,000 children were tested for lead. Nearly 70% of children tested were aged 1 to 2 years. 98% of children had BLLs of ≤4 μg/dL.

The number of children age 0-72 months tested for lead went up in 2017, while the number of children that had a BLL of ≥10 μg/dL were down. More significant is that the number of children with BLL of 5-9 μg/dL (2000 – 2016) are way down, which indicates the state of exposure and is a better indication of how well the program is working.

BLL distribution of children 0-72 months tested for lead in 1997, 2007, and 2017 shows that in 2017 nearly all of the cases were in the ≤4 μg/dL range, which demonstrates that there is lead in the environment that cannot be completely removed. Bill Peach asked whether the data indicate ambient exposure? Dr. Keyvan clarified that the POC threshold is 3.3, but that BLL levels below 5 μg/dL cannot be precisely determined. Mary Beth Haller asked whether there is any data on kids with BLL above 4 needing chelation.

The main source of childhood lead exposure is still lead based paint in older houses. The county data presented shows relation between percent tested and the year of housing.

State initiatives on blood lead testing: The Maryland Lead Testing Strategy of 2015 replaced the earlier strategy (2004) of targeted areas. Under new strategy the whole state of MD is declared as "at risk" with requirement that for 3 years (2016-2018) all children within the state are to be tested at 1 and 2 years of age and anytime that there is suspicious lead exposure. Under the new initiative testing rates have gone up. Children born in Jan 2015 are subject to the new universal testing policy. As the policy went into effect in March 2016, 2017 is first year in which we see the impact of universal screening. The projected numbers of tests was 127,091, but in reality, there were 131,832 children tested, which speaks to the impact that the policy is having on testing.

The increase in testing was mostly among children aged 1 and 2 with 49.4% of kids tested in 2017 being in that age category. There is somewhat of a trade off in that children of other ages are not being tested at previous rates. For example, 3 year olds have fairly high percent of BLL >5 μg/dL and may be showing the cumulative effects of lead poisoning. 4 and 5 year olds also have fairly high rates.

Compared to the pre-universal screening years (2010-2015), most jurisdictions had an increase in childhood blood testing in 2017. The average percentage drop is much less than the average percentage increase. The availability of POC may increase the number of testing; some jurisdictions have no POC testing. Cliff Mitchell commented that it is worth noting that in those jurisdiction that did show a drop in percentage testing, they nevertheless have a higher baseline of numbers of testing than they did previously.

Children who go to a provider's practice with access to POC are more likely to be tested for lead than are children who go to establishments with no access to POC.

The availability of POC may also increase the number of tests per child whether a child is exposed to lead or not. The average number of tests per child from 2011 to 2016 increased steadily, but dipped in 2017. In those first years, it may be that more tests were done because of the skill level of people conducting test which may have resulted in more false positives.

2015 had the highest number of cases of follow up with a capillary BLL $\geq$ 10 μg/dL and the percentage of 1st capillary BLL $\geq$10 μg/dL with same or next day follow up. The number of cases dipped in 2016, but rose again in 2017. Data indicate that increase of POC testing increases follow up in care.

Program achievements – overall 97.5% of children 1-5 have a BLL below the CDC "Reference Value" of $\leq$ 5 μg/dL. Compared to other parts of nation, MD is doing relatively well in terms of testing of children 0-72 months. Maryland ranks below New Jersey, Connecticut, Rhode Island, New York City, and Massachusetts. 22 states do not provide data to CDC. Compared to nationwide percentage of children with BLL $\geq$10, Maryland is doing pretty well.

That concluded the presentation. Commissioners were given a chance to comment or ask questions. Mary Beth Haller noted that with universal screening, there are a lot of areas in the state that are 60% or even close to 70% testing. Cliff Mitchell said that MDH is working with APA and GHHI to reach out to providers and noted on the chart the bump in 2017. He said that when they put universal screening in place, the idea was to do this for 3 years. MDH will have to see when they tease out the data where opportunities for increases are. It is good that with the increase in testing rates MD has not seen an increase in the proportion of kids with high BLLs.

Any increases in numbers of kids is due to the increase in numbers of kids tested and not an increase in exposure. Proportion of kids with ≥5 µg/dL is decreasing and that the state should ask, as we get closer to the midpoint of the experience, whether we are confident that the numbers are more representative of population. Currently, the data suggests that we can be confident that there is not a big reservoir of kids out there with high levels of exposure. The next challenge will be to be able to test more kids in the immigrant community because we know that children aren't being exposed here in Maryland -- but they could be treated here and get the educational information families need.

Manjula Paul cautioned that it takes time to get the immigrant community into the system. But, she noted, there are counties where they can get into the local health care system. There is a need for POC. She asked whether all health departments have information on lead exposure and POC when immigrant families come in for immunizations, etc. Cliff Mitchell said that Baltimore City is the only local health department that does POC testing. There was some discussion as to whether the Commission should recommend that other health departments follow Baltimore City's lead. It was noted that while the Commission can make a recommendation, it becomes a resource question – and having POC testing in all local health departments will require a lot of resources. Most of local departments don't have the staff and resources to do POC testing. Mary Beth Haller said that WIC offices do blood testing and that it seems like a good opportunity, though she noted there would be challenges. Wicomico County had a pilot program a few years ago that was successful.

There were a number of representatives from the Prince Georges County Health Department in attendance. Ali Golshiri, PGHD, said that in PG County the majority of immigrants or new arrivals have high BLLs when they arrive. PG County tests regardless of insurance. When an immigrant family arrives or has been here for a while and has a child with high blood lead levels, the problem very often is that they use surma or kohl eye cosmetics that contain high levels of lead. PG County takes the packages and confiscates the make up. They try to educate people, but they continue to use these traditional products.

Cliff Mitchell introduced the PG Team. He said the team will be going out to look for kids with lead and asthma and will conduct environmental assessments. They will also be talking about health care behaviors as well as triggers in the physical environment.

DHCD 1st Quarter Update – As the meeting was running long, Jack Daniels volunteered to table his presentation until next month.

Future Meeting Dates
The next Lead Commission Meeting is scheduled for **Thursday, December 6, 2018**, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency Updates

Maryland Department of Environment – nothing further to report.

Maryland Department of Health – nothing further to report.

Maryland Department of Housing and Community Development – nothing to report.

Baltimore City Health Department – nothing further to report.

Baltimore City Housing and Community Development – nothing to report.

Office of Child Care – nothing else to report.

Maryland Insurance Administration – no representative present.

Public Comment
Ludeen Green requested that a representative from MDE talk about lead in water and have another discussion.

Adjournment
A motion was made by Christina Peusch to adjourn the meeting, seconded by Mary Beth Haller. The motion was approved unanimously and the meeting was adjourned at 11:35. AM.

EPA United States Environmental Protection Agency

News Releases from Region 03

EPA raises awareness of lead paint rules in Philadelphia

10/25/2018

Contact Information:
EPA Region 3 Press Office: (R3press@epa.gov)

PHILADELPHIA (October 25, 2018) -- The U.S. Environmental Protection Agency (EPA) is working with local partners to raise awareness of EPA's lead-based paint rules in Philadelphia neighborhoods.

"By educating the public about the dangers of lead paint and increasing awareness of lead paint rules, we can help reduce lead poisoning in children," said EPA's Mid-Atlantic Regional Administrator Cosmo Servidio. **"This initiative is a focused effort with our local counterparts to reduce lead exposure in Philadelphia, where there is a large amount of older housing stock with lead paint that has not been removed."**

The most common source of lead exposure is through deteriorating lead-based paint in residences and commercial buildings built before 1978. EPA, along with partners from other federal agencies, the city of Philadelphia, and independent non-profit organizations are targeting communities where pre-1978 housing stock is prevalent.

Outreach efforts include in-person meetings, distributing technical assistance information, visits to paint/hardware stores, awareness training for city inspectors and providing information to contractors/renovators and property management firms. Information is also provided to daycare centers, childcare and healthcare focused organizations.

EPA enforces and raises awareness of several rules. The Renovation, Repair and Painting Rule (RRP) applies when a renovation or repair disturbs six square feet of interior (about the size of a standard poster) or 20 square feet (about the size of a standard door) of exterior painted surfaces.

The RRP rule requires that those working on pre-1978 housing be trained by an EPA-accredited training provider, be employed by a certified firm, use the required work practices to control exposure to lead/lead dust, and provide information on the rule to owner and tenants.

The Lead-based Paint Disclosure Rule requires owners of residential rental properties and sellers of residential property built before 1978 to disclose known information on lead-based paint and lead-based paint hazards before a lease or sale becomes enforceable. Sales contracts and leases must include a disclosure form about lead-based paint. Buyers have up to 10 days to check for lead hazards. Further, landlords and sellers must also provide the EPA publication "Protect Your Family from Lead in Your Home."

To find Certified “Lead-Safe” providers, go to www.epa.gov/lead or call 1-800-424-LEAD. The RRP rule does not apply to individuals doing work on their personal residences.

For more information on becoming a Certified “Lead-Safe” firm or renovator, or finding a certified firm for your renovation or repair project, go to: www.epa.gov/lead or call the National Lead Information Center at 1-800-424-LEAD (5323).

Earlier this week, EPA released a report called “Protecting Children from Lead Exposures” to highlight some of the ongoing programs being worked on across the various program and regional offices. The Agency continues to aggressively address lead issues across America, working with communities and partners to further identify and eliminate lead exposure, especially for children who are most vulnerable to lead poisoning.

LAST UPDATED ON OCTOBER 25, 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Annual Report 2017
Childhood Blood Lead Surveillance in Maryland
Medical and Environmental Case Management

2017 Maryland Lead Surveillance Highlights

- In CY 2017, the total number of children 0-18 years of age blood lead tested was 143,200. The total number of blood lead test results reported to the CLR on children 0-18 years of age was 151,206.

- The statewide average number of children aged 0-72 months tested for lead from CY 2010-2015 was 110,706. In CY 2016, blood lead testing of children 0-72 months was 17.8% higher than the 2010-2015 historical average, at 118,619 children tested. In CY 2017 testing again increased, and was **19.1%** higher than the 2010-2015 average, at 131,832 children tested.

- Blood lead testing of children 0-72 months increased by more than 19% compared to CY 2015 when universal testing was not in place. Despite such an increase in blood lead testing, the number of children with a blood lead level ≥ 10 micrograms per deciliter (µg/dL) increased by less than 3% (compared to 2015) while the number of children with a blood lead level of 5-9 µg/dL decreased by 7.1% (compared to 2015).

2017 Maryland Lead Surveillance Highlights (Cont.)

•The number of children 0-72 months identified with blood lead levels of ≥10µg/dL increased from 355 in CY 2016 to 388 in CY 2017. The number of children identified with blood lead levels of 5-9 µg/dL decreased from 1,729 in CY 2016 to 1,661 in CY 2017. The overall number of children identified with blood lead levels of ≥ 5µg/dL decreased from 2,084 in CY 2016 to 2,049 in CY 2017.

• During CY 2017, there were 260 Confirmed Cases that required medical and environmental case management in Maryland. This was an increase of 22 Confirmed Cases when compared to CY 2016 (238).

•During CY 2016, the Department began comprehensively tracking sources of childhood lead exposure. While lead-based paint is still the most frequently identified hazard, a significant number of children aged 0-72 months that were identified with an Elevated Blood Lead Level of ≥10 µg/dL ("EBL") may have been exposed to lead from sources other than lead-based paint hazards. Other risk factors included exposure to sources such as cosmetics and spices.

Lead Case Management Maryland

The Department's Case Management Guidelines ("Guidelines") require medical case management when a child aged 0-72 months is identified with a first time venous or two capillary blood lead tests of ≥10 µg/dL("Confirmed Case").

Identifying all potential sources of lead in the child's environment and preventing further exposure are the most important factors in case management of a child. All home visits are arranged with the family based on the availability of the parent/guardian and in accordance with recommendations identified in the Case Management Guidelines. Incorporated into the MDE Case Management Guidelines is a questionnaire that determines what testing is needed.

Confirmed Cases CY 2017
Baltimore City

Of the 260 Confirmed Cases during CY 17 in Maryland, there were a total of 81 Confirmed Cases identified in Baltimore City. This was an decrease in of 26 cases compared to the Confirmed Cases in Baltimore City in CY 2016 (107). This was a decrease of 59 cases compared to 140 Confirmed Cases in CY 15.

* Data Based on Baltimore City Health Department

Confirmed Cases CY 2017
Owner Occupied vs. Rental
Baltimore City

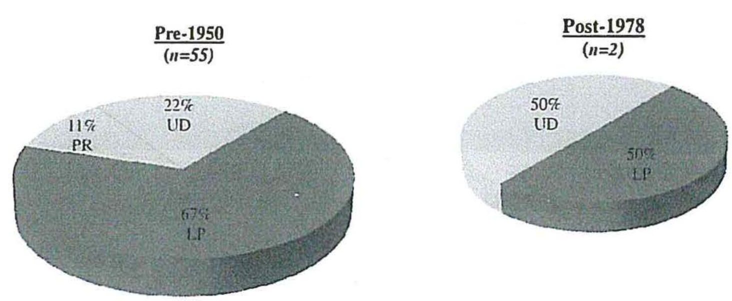
Occupancy Type	Pre 1950	1950-1977	Post 1977	Total Percentage (81 Cases)
Rental Occupied	55 (67.9%)	0	2 (2.5%)	70.4%
Owner Occupied	23 (28.4%)	1 (1.2%)	0	29.6%

Lead Case Management Outcomes CY 2017
Baltimore City Only*

Total Confirmed Cases =81			
Medical Home Visits=90% Completion Rate			
Completed Home Visit	Unable to Locate Family	Incorrect Address	Moved Prior to Contact
73	4	1	3
Environmental Investigations= 82.7% Completion			
Completed Inspection	Refused Inspection	Incorrect Address	Moved Prior to Contact
67	0	8	5

* Data Based on Baltimore City Health Department

Lead Sources Identified
Rental Housing CY 2017
Baltimore City*



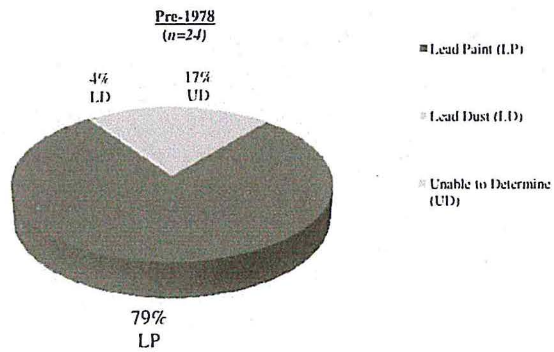
Lead Paint (LP)

Personal (PR) (Jewelry, Toys, etc)

Unable to Determine (UD)

* Data Based on Baltimore City Health Department

Lead Sources Identified
Owner Occupied Housing CY 2017
Baltimore City*



* Data Based on Baltimore City Health Department

Lead Case Management Outcomes CY 2017
Other Maryland Counties

Of the 260 Confirmed Cases during CY 2017 in Maryland, there were a total of 179 Confirmed Cases identified in the Maryland Counties (excluding Baltimore City). This was an increase of 48 cases compared to the Confirmed Cases in in Maryland Counties in CY 2016 (131).

The increase in the number of confirmed cases was expected due to increased testing. At the jurisdiction (county) level, blood lead testing of children ages one and two increased in seventeen (17) jurisdictions.

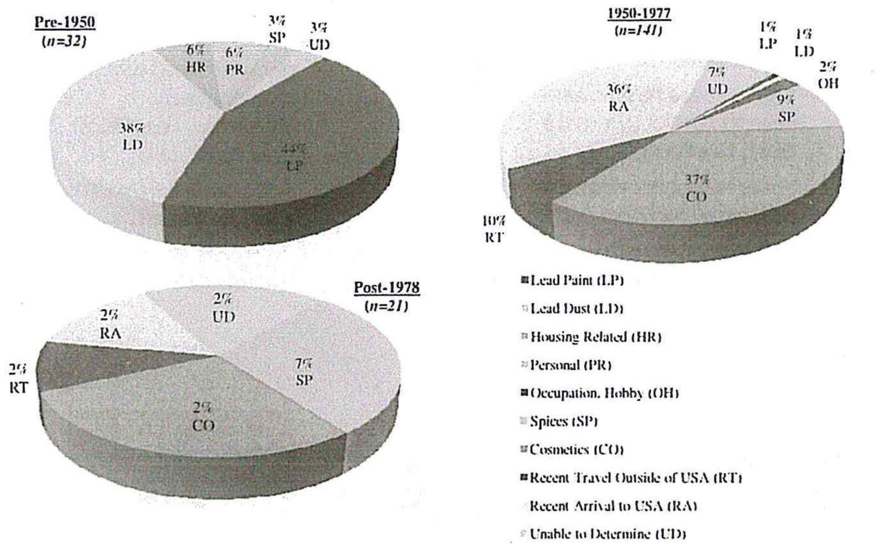
Confirmed Cases CY 2017
Owner Occupied vs. Rental & Built Date
Maryland Counties

Occupancy Type	Pre-1950	1950-1977	Post 1977	Total Cases (179)
Rental Property	15 (8.4%)	81 (45.2%)	18 (10.1%)	114 (63.7%)
Owner Occupied	25 (14%)	14 (7.8%)	26 (14.5%)	65 (36.3%)

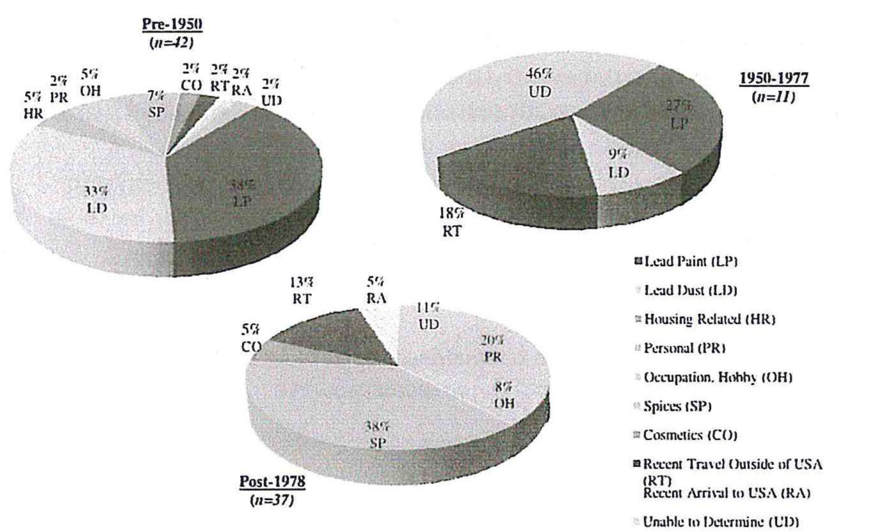
Case Management Outcomes
Maryland Counties

Total Confirmed Cases =179			
Medical Case Management 87 % Completion Rate			
Completed Home Visit	Telephonic Case Management	Refused Home Visit	Unable to Locate Family
142	14	20	3
Environmental Investigations=87% Completion Rate			
Completed Inspection	Refused Inspection	Unable to Locate Family	
156	20	3	

Lead Sources Identified
Rental Housing CY 2016 (Excluding Baltimore City)



Lead Sources Identified
Owner Occupied Housing CY 2017
(Excluding Baltimore City)



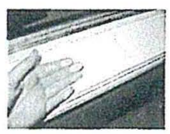
Source Overview

In Baltimore City Of all 64 sources identified:

- 58 were lead based paint hazards. (Defective Lead Paint, Lead Dust);
- 6 were sources other than lead based paint hazards
- 17 were Unknown or Unable to Determine.

In Maryland Counties Of all 259 sources identified :

- 66 were lead based paint hazards. (Defective Lead Paint, Lead Dust, soil);
- 193 were sources other than lead based paint.
- 25 were Unknown or Unable to Determine.



Takeaway

1. Increased of testing in Maryland Counties has increased the number of lead cases however, the percentage of cases still remains at 0.3%.
2. Baltimore City hit an all time low in lead cases.
3. Lead Based Paint Hazards are less significant in rental housing built from 1950 – pre 1978 then they are in owner occupied housing built at the same time.
4. Sources other than lead based paint are still relevant in eliminating lead exposures.
5. Continued collaboration between local, state and federal partners is imperative in preventing future lead exposures.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Maryland Childhood Blood Lead Surveillance
Calendar Year 2017

Annual Report, October 2018

MARYLAND CHILDHOOD LEAD REGISTRY
ANNUAL SURVEILLANCE REPORT CY 2017

Executive Summary

The Maryland Department of the Environment (Department), Childhood Lead Registry (CLR) performs childhood blood lead surveillance for Maryland. The CLR receives reports of all blood lead tests that are performed on Maryland children 0-18 years of age. The CLR provides blood lead test data to the Maryland Department of Health (MDH), including Medicaid, Immunet, and local health departments as needed for case management. Since 1995, the CLR has released a comprehensive annual report on statewide childhood blood lead testing along with five "Supplementary Data Tables" which provide a detailed breakdown of blood lead data by age, jurisdiction, blood lead level, incidence and prevalence of lead exposure, and the trend of blood lead levels across many years. This report presents the childhood blood lead test results for calendar year (CY) 2017. All numbers are based on blood lead testing (venous or capillary) of children. With few exceptions all numbers are associated with children aged 0-72 months.

CY 2017 Maryland Surveillance Highlights:

- In CY 2017, the total number of children 0-18 years of age blood lead tested was 143,200. The total number of blood lead test results reported to the CLR on children 0-18 years of age was 151,206.

- The statewide average number of children aged 0-72 months tested for lead from CY 2010-2015 was 110,706. In CY 2016, blood lead testing of children 0-72 months was 17.8% higher than the 2010-2015 historical average, at 118,619 children tested. In CY 2017 testing again increased, and was **19.1%** higher than the 2010-2015 average, at 131,832 children tested.

- The increase in blood lead testing of children aged 0-72 months from CY 2016-2017 may be attributed to two state initiatives: 1) endorsement of Point of Care testing for lead and 2) universal blood lead testing of children at one and two years of age.

- The overall blood lead testing of children 0-72 months increased by more than 19% compared to CY 2015 when universal testing was not in place. Despite such an increase in blood lead testing, the number of children with a blood lead level ≥ 10 micrograms per deciliter (µg/dL) increased by less than 3% (compared to 2015) while the number of children with a blood lead level of 5-9 µg/dL decreased by 7.1% (compared to 2015).

- The number of children 0-72 months identified with blood lead levels of ≥10µg/dL increased from 355 in CY 2016 to 388 in CY 2017. The number of children identified with blood lead levels of 5-9 µg/dL decreased from 1,729 in CY 2016 to 1,661 in CY 2017. The overall number of children identified with blood lead levels of ≥ 5µg/dL decreased from 2,084 in CY 2016 to 2,049 in CY 2017.

- During CY 2016, the Department began comprehensively tracking sources of childhood lead exposure. While lead-based paint is still the most frequently identified hazard, a significant number of children aged 0-72 months that were identified with an Elevated Blood Lead Level of

$\geq$10 µg/dL ("EBL") may have been exposed to lead from sources other than lead-based paint hazards. Other risk factors included exposure to sources such as cosmetics and spices.

Overview

Exposure to lead is still the most significant and widespread environmental health concern for children in Maryland. While the prevalence and incidence of elevated blood lead levels 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 developing. Exposure to lead can cause long-term neurological damage that may be associated with learning and behavioral problems and with decreased intelligence.

According to the Centers for Disease Control and Prevention (CDC), there is no threshold level for blood lead that can be considered "safe." In March 2012, CDC established a blood lead level of 5 µg/dL or higher as the "reference value" at which case management is recommended. Previously, CDC used a blood lead level of 10 µg/dL or higher as the "level of concern." Maryland has implemented recommendations for case management for children with blood lead level 5-9 µg/dL. At blood lead levels $\geq$10 µg/dL, standard case management, home visits, and environmental inspections are instituted.

Initiatives and Incidence CY 2017

In CY 2017, the Department and MDH continued to work closely to monitor two regulatory initiatives that were implemented in CY 2016 to increase lead testing of children aged 0-72 months statewide.

- **The Maryland Lead Testing Initiative**
  The Maryland Lead Testing Targeting Strategy of 2015 replaced the previous Targeting Plan, adopted by the MDH in 2004. Under this new strategy, the entire state was declared as "at risk," compared with the prior plans that recognized certain areas as "at risk." New regulations adopted by MDH in March 2016 implemented the new Testing Targeting Strategy by requiring health care providers to lead test all children born on or after January 1, 2015 at the age of 12 and 24 months.

- **Point of Care Testing**
  In its report to the Maryland General Assembly in 2014, the Task Force on Point of Care (POC) Testing for Lead Poisoning recommended that: 1) the state encourage health care providers to use POC testing for lead testing, and 2) the MDH Laboratories Administration promote the use of POC tests for lead by making it easier for providers to implement POC testing. In response, MDH adopted regulations allowing health care providers increased access to POC testing to screen for elevated levels of lead in children. The amendment to COMAR 10.10.03.02B added whole

Pre-1950 Housing Significance

To relate the blood lead levels of children tested for lead with the age of housing they were living in at the time of the test, address information (including actual address data, address longitude and latitude, or address census block group) was matched with the Maryland Department of Assessments and Taxation real estate file to find and assign the year the structure was built. Close to 71% of addresses were able to be matched. Of those, the majority of the children identified with an elevated blood lead level were residing in pre-1950 housing at the time of the test.

blood lead testing to the list of tests that qualify for a Letter of Exception, so that providers would have an easier time setting up POC testing.

The state's endorsement of POC testing for lead poisoning has significantly increased the number of clinics conducting in-office blood lead testing (from 66 in CY 2015 to 94 in CY 2016 and 105 in CY 2017). POC testing also results in more hard copy reports submitted by clinics to CLR. Hard copy reports requiring manual processing increased from 17.5% in CY 2015 to 23.2% in CY 2016 and 35.8% in CY 2017.

Refugee and Immigrant Outreach

The Department coordinated efforts with local health departments and refugee health clinics to educate humanitarian immigrant families that were affected by lead in CY 2017. These efforts were significant in Prince George's County, where there were a total of 49 confirmed cases of childhood lead poisoning in which the child recently immigrated to the U.S. and re-settled in Maryland.

Migration into New System for CLR

The Department continues to test the functionality of the new CDC data processing package, Healthy Homes and Lead Poisoning Surveillance system (HHLPSS). The Department expects migration of data from the current data system, Systematic Tracking of Elevated Lead Levels and Remediation (STELLAR) into the new system by the end of CY 2018.

Statistical Report
In CY 2017, a total of 131,832 children 0-72 months were tested for lead exposure statewide. Table One provides a summary of statewide statistics of blood lead testing in CY 2017.

Table One
CY 2017 Statistical Report[1]

Item	Number	Percent (%)[2]
All Children		
Number of tests	151,206	
Number of children tested	143,200	
Children 0-72 Months		
Number of tests	139,435	
Number of children tested	131,832	100.0
Age		
Under One	10,698	8.1
One Year	48,045	36.4
Two Years	42,768	32.4
Three Years	11,219	8.5
Four Years	11,143	8.5
Five Years	7,959	6.0
Sex		
Female	63,841	48.4
Male	66,506	50.5
Undetermined	1,485	1.1
Highest Blood Lead Level (µg/dL)		
≤4	129,783	98.4
5-9	1,661	1.3
10-14	257	0.2
15-19	57	0.0
≥20	74	0.0
Mean BLL (Geometric mean)	1.666	
Blood Specimen		
Capillary	52,927	40.1
Venous	77,253	58.6
Undetermined[3]	1,652	1.3

1. For detailed analysis and break down of numbers refer to Supplementary Data Tables 1-5.
2. Due to rounding percentages to first decimal point, the sum of break down percentage may not equal total percentage.
3. In supplementary data tables blood tests with sample type unknown were counted as capillary

Figure One
Number of Children 0-72 Months Tested for Lead and Number Reported to Have Blood Lead Level ≥10 µg/dL: 2000-2017

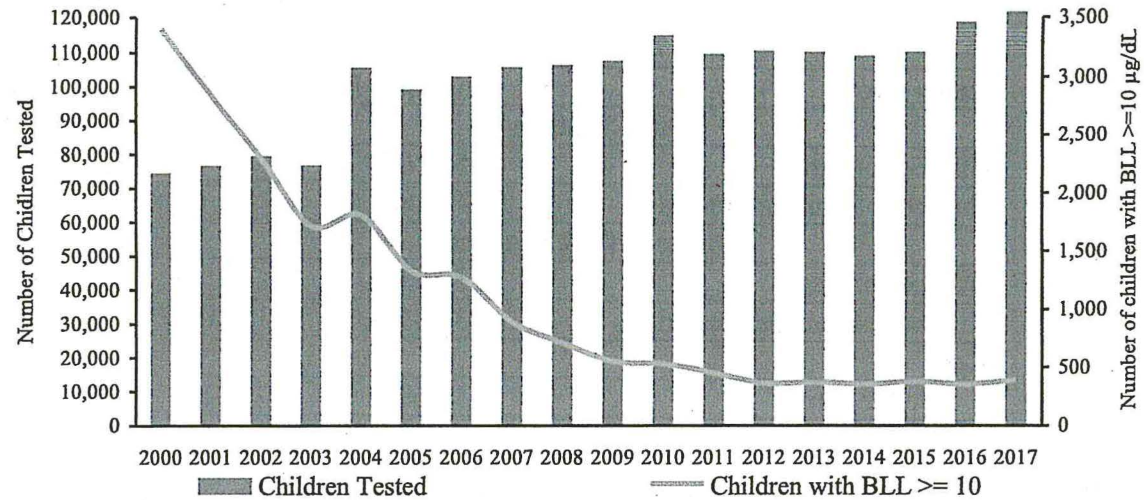


Figure Two
Percent of Children 0-72 Months Tested for Lead with the Highest Blood Lead Level 5-9 µg/dL: 2000-2017

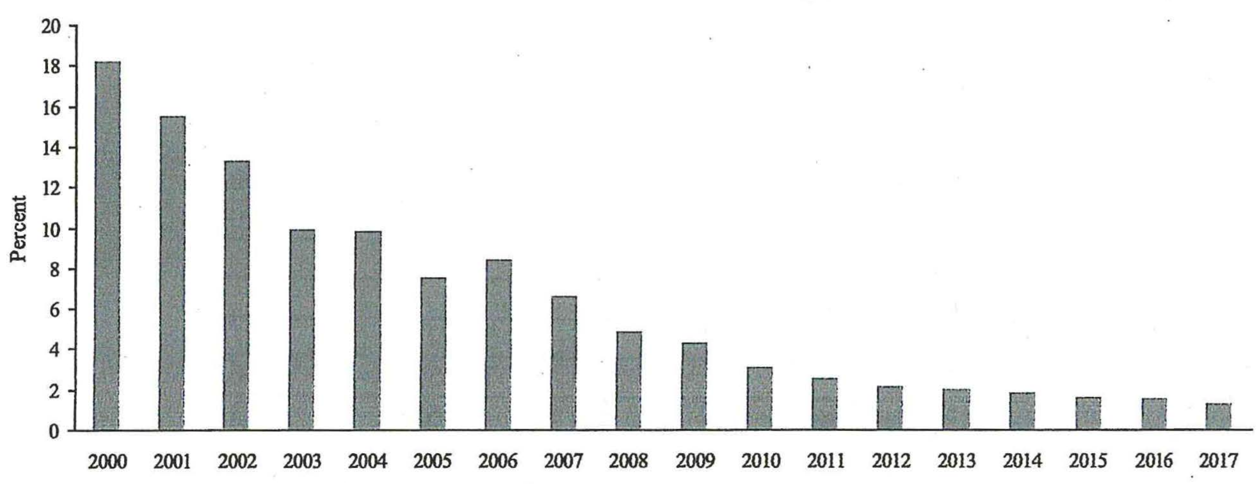


Table Two provides a breakdown of blood lead testing of children aged 0-72 months by jurisdiction in CY 2017. Appendix A provides a breakdown of blood lead testing and the status of children by age groups of 0-35 months and 36-72 months by jurisdiction in CY 2017.

Table Two
Blood Lead Testing of Children Aged 0-72 Months by Jurisdiction in CY 2017[1]

County	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	5,221	1,150	22.0	8	0.7	24	2.1	32	2.8	3	0.3	4	0.3	7	0.6
Anne Arundel	51,849	12,159	23.5	12	0.1	50	0.4	62	0.5	1	0.0	11	0.1	12	0.1
Baltimore	72,222	18,129	25.1	36	0.2	133	0.7	169	0.9	5	0.0	34	0.2	39	0.2
Baltimore City	60,872	17,098	28.1	203	1.2	438	2.6	641	3.8	48	0.3	100	0.6	148	0.9
Calvert	7,704	909	11.8	0	0.0	5	0.6	5	0.6	0	0.0	2	0.2	2	0.2
Caroline	3,483	750	21.5	3	0.4	13	1.7	16	2.1	0	0.0	4	0.5	4	0.5
Carroll	14,041	2,517	17.9	1	0.0	18	0.7	19	0.8	0	0.0	5	0.2	5	0.2
Cecil	9,727	1,737	17.9	3	0.2	19	1.1	22	1.3	0	0.0	4	0.2	4	0.2
Charles	14,248	2,628	18.4	2	0.1	19	0.7	21	0.8	0	0.0	3	0.1	3	0.1
Dorchester	3,009	655	21.8	4	0.6	7	1.1	11	1.7	2	0.3	5	0.8	7	1.1
Frederick	22,554	5,237	23.2	2	0.0	35	0.7	37	0.7	2	0.0	11	0.2	13	0.2
Garrett	2,399	406	16.9	2	0.5	4	1.0	6	1.5	0	0.0	0	0.0	0	0.0
Harford	22,685	4,831	21.3	1	0.0	50	1.0	51	1.1	1	0.0	4	0.1	5	0.1
Howard	26,567	5,678	21.4	10	0.2	36	0.6	46	0.8	2	0.0	11	0.2	13	0.2
Kent	1,516	203	13.4	0	0.0	3	1.5	3	1.5	0	0.0	0	0.0	0	0.0
Montgomery	95,846	25,594	26.7	22	0.1	137	0.5	159	0.6	4	0.0	28	0.1	32	0.1
Prince George's	87,289	22,754	26.1	28	0.1	226	1.0	254	1.1	11	0.0	66	0.3	77	0.3
Queen Anne's	4,164	736	17.7	1	0.1	5	0.7	6	0.8	0	0.0	1	0.1	1	0.1
Saint Mary's	11,416	1,530	13.4	4	0.3	7	0.5	11	0.7	0	0.0	0	0.0	0	0.0
Somerset	1,911	444	23.2	2	0.5	3	0.7	5	1.1	0	0.0	1	0.2	1	0.2
Talbot	2,852	647	22.7	1	0.2	6	0.9	7	1.1	1	0.2	1	0.2	2	0.3
Washington	13,643	2,815	20.6	4	0.1	33	1.2	37	1.3	0	0.0	5	0.2	5	0.2
Wicomico	9,226	2,285	24.8	8	0.4	18	0.8	26	1.1	3	0.1	4	0.2	7	0.3
Worcester	3,487	924	26.5	3	0.3	12	1.3	15	1.6	0	0.0	1	0.1	1	0.1
County Unknown		16		0		0		0		0		0		0	
Statewide	547,931	131,832	24.1	360	0.3	1,301	1.0	1,661	1.3	83	0.1	305	0.2	388	0.3

1. The table is based on the selection of the highest blood lead test for each child in CY 2017 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 the blood lead level of 5-9 μg/dL in CY 2017 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 CY 2017. 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 levels ≥10 μg/dL. These children may have carried from CY 2016 or had a blood lead test with blood lead levels ≥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 first decimal point, the sum of breakdown percentages may not necessarily equal total percentage.

Impact of Universal Lead Testing and Point of Care Testing in CY 2017

The Maryland Lead Testing Targeting Strategy of 2015 (the Strategy) replaced the prior Lead Targeting Plan of 2004. The new strategy was implemented with the adoption of new lead testing requirements by MDH (COMAR 10.11.04), which became effective on March 28, 2016. Under the new regulation, the entire state of Maryland is now declared "at risk" for lead exposure. The Strategy requires that all children in the State be tested at their 12 and 24 month visits, and any time there is a suspicion of a possible lead exposure (hereinafter "universal testing"). Further, in its report to the General Assembly in 2014, the Task Force on POC Testing for Lead Poisoning recommended that: 1) the state encourages the use of POC for lead testing, and 2) the MDH Laboratories Administration promote the use of POC tests for lead by making it easier for providers to implement POC testing. POC testing commonly refers to a testing procedure that takes place in the location where the patient is being seen. At this time, the only POC instrument approved by the U.S. Food and Drug Administration for testing lead is the LeadCareII.

These initiatives had a significant impact on blood lead testing statewide. The number of clinics that started using the POC testing instrument for blood lead testing (Figure Three) significantly increased over the years 2011-2017. This has also created a significant increase in the number of hard copy reports processed by the CLR (Figure Four).

Figure Three
Number of Reporting Laboratories: 2011-2017

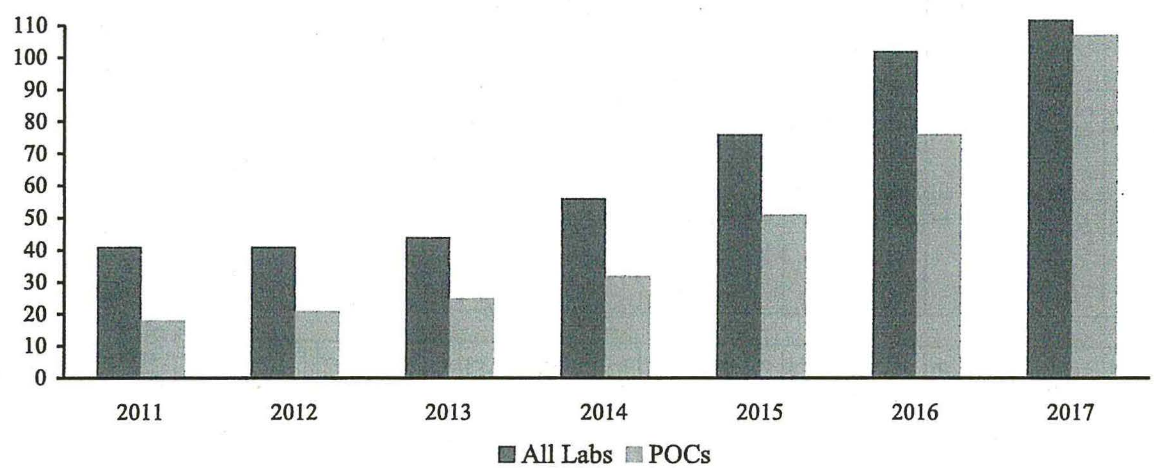
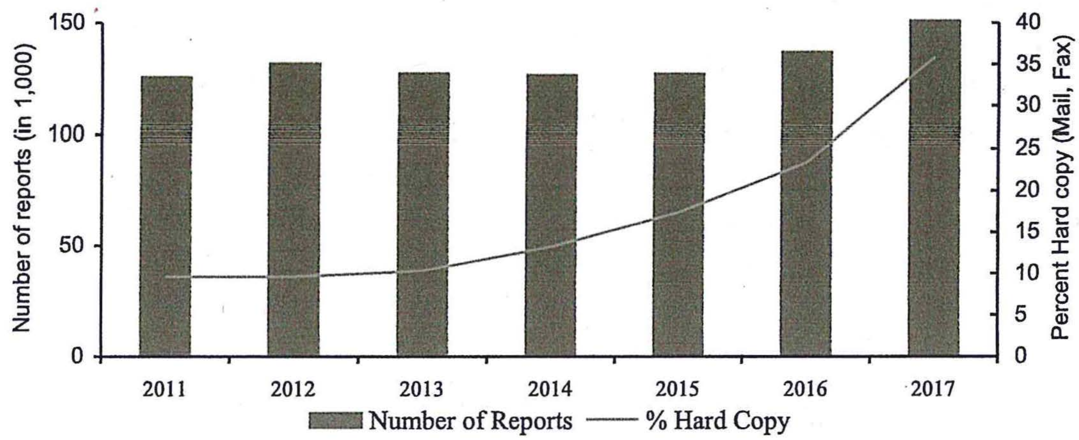


Figure Four
Number of Hard Copy Blood Lead Tests Reported to CLR: 2011-2017



Both initiatives increased the number of blood lead tests for children aged 0-72 months, from an annual average of 116,049 (2010-2015) to 125,984 (8.6% increase) in 2016 and to 139,435 (20.2% increase) in CY 2017. As expected, the number of children ages one and two who were tested for lead was much more significant than children of other ages (Figure Five, Table Three).

Figure Five
Percentage of Children Tested for Lead, Ages One and Two vs. Other Ages 2010-2017

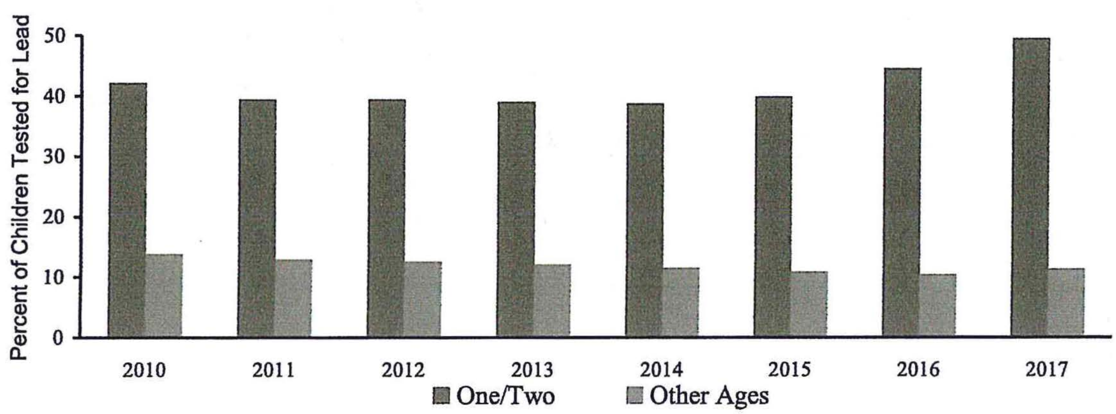


Table Three
Blood Lead Testing of Children One and Two Years Old by Jurisdiction in CY 2017

	One Year Old			Two Years Old			One and Two Years Old Total			All Other Ages		
		Children Tested			Children Tested			Children Tested			Children Tested	
County	Population	Number	Percent	Population	Number	Percent	Population	Number	Percent	Population	Number	Percent
Allegany	839	512	61.0	877	502	57.2	1,716	1,014	59.1	3,505	136	3.9
Anne Arundel	8,789	5,114	58.2	8,691	4,257	49.0	17,480	9,371	53.6	34,369	2,788	8.1
Baltimore	12,329	6,838	55.5	11,991	6,276	52.3	24,320	13,114	53.9	47,902	5,015	10.5
Baltimore City	10,815	5,831	53.9	10,385	5,433	52.3	21,200	11,264	53.1	39,672	5,834	14.7
Calvert	1,207	430	35.6	1,235	293	23.7	2,442	723	29.6	5,262	186	3.5
Caroline	569	314	55.2	572	293	51.2	1,141	607	53.2	2,342	143	6.1
Carroll	2,181	1,131	51.9	2,262	843	37.3	4,443	1,974	44.4	9,598	543	5.7
Cecil	1,662	688	41.4	1,616	414	25.6	3,278	1,102	33.6	6,449	635	9.8
Charles	2,293	1,000	43.6	2,477	928	37.5	4,770	1,928	40.4	9,478	700	7.4
Dorchester	511	280	54.8	516	233	45.2	1,027	513	50.0	1,982	142	7.2
Frederick	3,580	2,217	61.9	3,791	1,860	49.1	7,371	4,077	55.3	15,183	1,160	7.6
Garrett	358	164	45.8	403	156	38.7	761	320	42.0	1,638	86	5.3
Harford	3,718	1,772	47.7	3,737	1,570	42.0	7,455	3,342	44.8	15,230	1,489	9.8
Howard	4,209	2,338	55.5	4,449	1,890	42.5	8,658	4,228	48.8	17,909	1,450	8.1
Kent	258	93	36.0	239	69	28.9	497	162	32.6	1,019	41	4.0
Montgomery	16,061	8,255	51.4	16,111	8,037	49.9	32,172	16,292	50.6	63,674	9,302	14.6
Prince George's	14,935	7,115	47.6	14,638	6,388	43.6	29,573	13,503	45.7	57,716	9,251	16.0
Queen Anne's	663	313	47.2	666	290	43.5	1,329	603	45.4	2,835	133	4.7
Saint Mary's	1,870	796	42.6	1,869	455	24.3	3,739	1,251	33.5	7,677	279	3.6
Somerset	325	198	60.9	344	177	51.5	669	375	56.1	1,242	69	5.6
Talbot	503	285	56.7	500	262	52.4	1,003	547	54.5	1,849	100	5.4
Washington	2,212	1,019	46.1	2,309	941	40.8	4,521	1,960	43.4	9,122	855	9.4
Wicomico	1,591	943	59.3	1,542	852	55.3	3,133	1,795	57.3	6,093	490	8.0
Worcester	592	392	66.2	581	344	59.2	1,173	736	62.7	2,314	188	8.1
Statewide	92,070	48,045	52.2	91,801	42,768	46.6	183,871	90,813	49.4	364,060	41,019*	11.3

* Includes four cases of County Unknown.

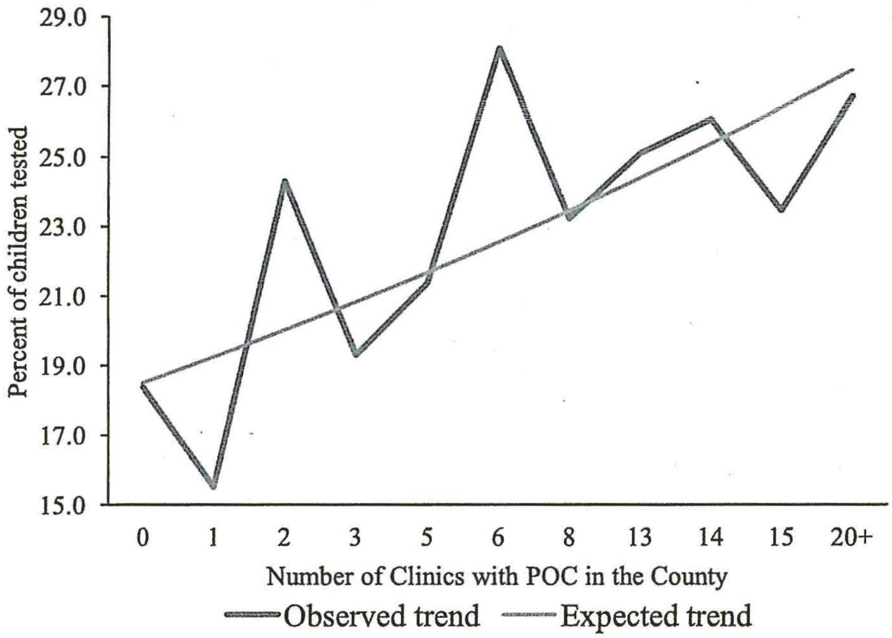
At the jurisdiction (county) level, blood lead testing of children ages one and two increased in seventeen (17) jurisdictions and decreased in 7 jurisdictions (Table Four). The increases ranged from 1.9% in Garrett County to 158.3% in Howard County. Three of the jurisdictions with a decrease in blood lead testing (Caroline, Dorchester, and Somerset) did not have a clinic with a POC facility.

Table Four
Percent Change in Blood Lead Test of Children Ages One and Two
From CY 2010-2015 (Averaged) to CY 2017

County	Percent of Children Ages One and Two Tested in CY 2010-2015	Percent of Children Ages One and Two Tested in CY 2017	% Change
Allegany	66.6	59.1	-11.2
Anne Arundel	36.2	53.6	48.1
Baltimore	49.6	53.9	8.7
Baltimore City	59.8	53.1	-11.1
Calvert	20.5	29.6	44.3
Caroline	56.1	53.2	-5.2
Carroll	20.3	44.4	118.6
Cecil	26.7	33.6	25.8
Charles	30.9	40.4	30.8
Dorchester	54.7	50.0	-8.5
Frederick	29.6	55.3	86.5
Garrett	41.2	42.0	1.9
Harford	24.9	44.8	80.1
Howard	18.9	48.8	158.3
Montgomery	35.0	50.6	44.7
Kent	40.8	32.6	-20.1
Prince George's	39.6	45.7	15.3
Queen Anne's	31.5	45.4	44.3
Saint Mary's	31.0	33.5	8.1
Somerset	63.4	56.1	-11.5
Talbot	56.5	54.5	-3.5
Washington	40.6	43.4	6.9
Wicomico	54.3	57.3	5.6
Worcester	54.3	62.7	15.5

The availability of POC testing has increased throughout the state; however, an increase in blood lead testing did not always correlate with the availability of POC testing. (Figure Six).

Figure Six
Number of Clinics with POC Testing and Average Blood Lead Testing in the County



Establishments with access to POC testing showed more blood lead testing than establishments with no access to POC testing (Table Five)

Table Five
Average Tests Per Establishment/Clinic for Establishments/Clinic with and without POC Testing*

Establishments	Number of Clinics	No. of Tests	Average No. of Tests Per Clinic
With POC	119	41,028	345
No POC	1,371	110,189	80
Total	1,490	151,217	102

*The breakdown is based on establishment address as provided in the blood lead report. Within the limitations of the data, findings of the table should be interpreted with caution. Total count may not match actual number of test due to the possibility of a test being counted more than once.

Childhood Lead Exposure and Housing

Childhood lead exposure decreased in CY 2017. Figure Seven illustrates that in 1997, of children aged 0-72 months who were tested for lead, approximately 65% had a blood lead level of ≤ 4 µg/dL. In 2017, this percentage increased to more than 98%. This graph demonstrates the success of the Department in reducing the extent and severity of lead exposure among children

as more and more children have less burden of lead in their bodies. On the other hand, the graph demonstrates the difficulty the Department has in achieving its ultimate goal of eliminating lead exposure, because children are still being exposed at lower levels.
Childhood lead exposure further dropped in 2017 (Figure Eight) which confirms the effectiveness of preventative measures implemented by the state. The main culprit of childhood lead exposure is still lead-based paint in houses built before 1950. Figure Nine displays the direct correlation of percentage of pre-1950 housing and percentage of children 0-72 months tested for lead with blood lead level ≥5 μg/dL at the county level.

Figure Seven
Blood Lead Distribution of Children 0-72 Months Tested for Lead in CYs 1997, 2007, and 2017

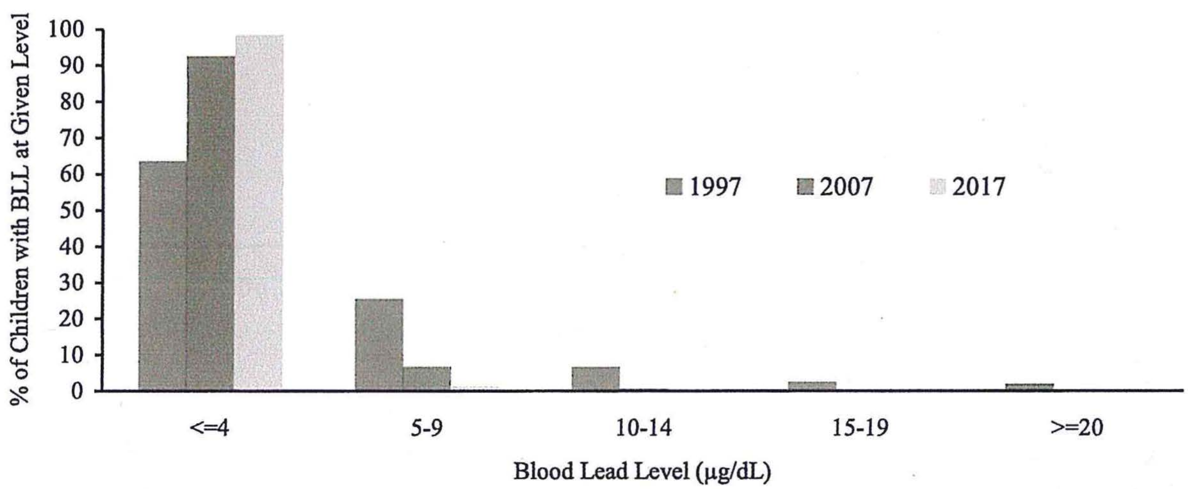
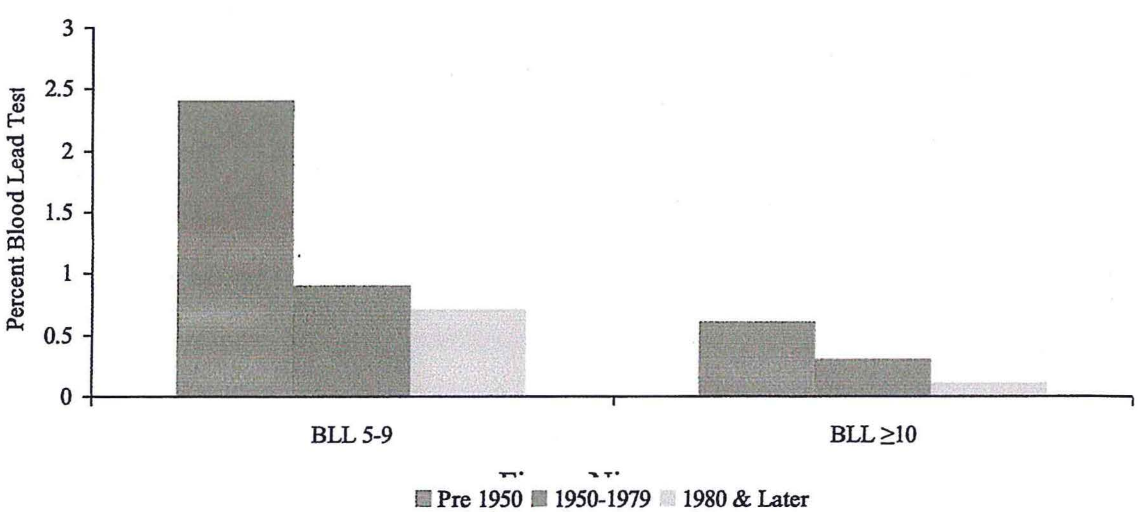
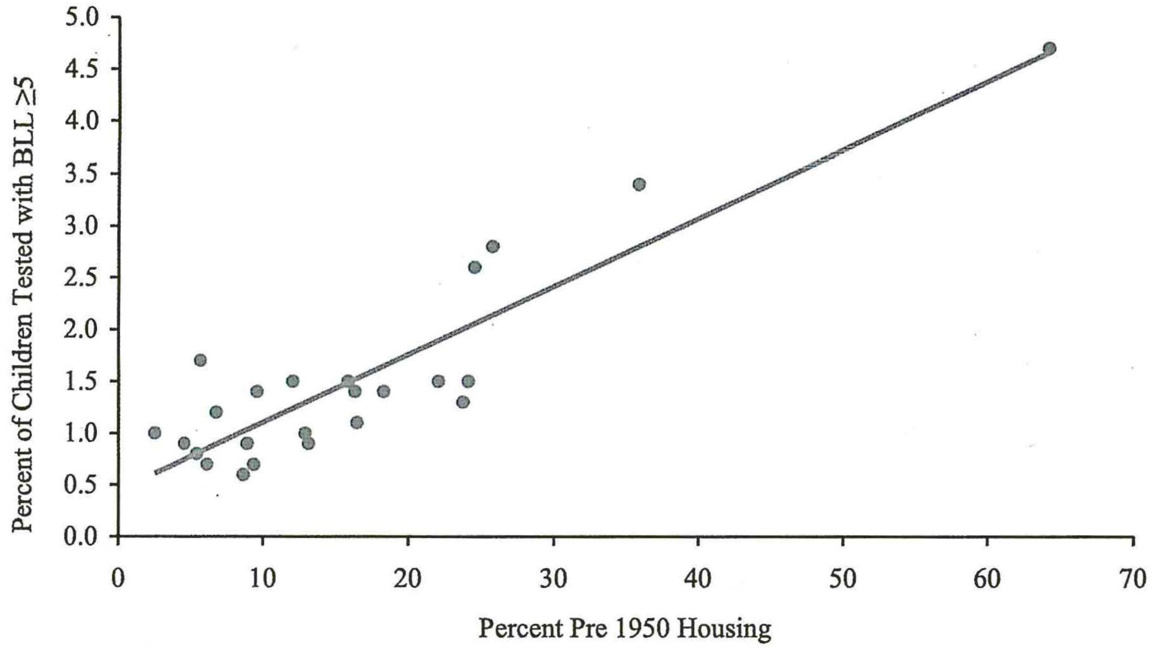


Figure Eight
Percent of Children 0-72 Months with Blood Lead Levels 5-9 or ≥10 μg/dL, by the Construction Date of the Home



Percent of pre-1950 Housing and Percent of Children Tested with Blood Lead Level $\geq$5 µg/dL



Blood Lead Distribution of Children 0-72 Months Tested for Lead in CYs 1997, 2007, and 2017
Even with the Department's efforts to enforce the provisions of the Reduction of Lead Risk in Housing Act (the Act), children are still being exposed to lead paint hazards in pre-1978 residential rental housing. In Maryland, the belief that no child should be exposed to lead paint hazards continues to be at the forefront of public health policy. Residential housing built prior to the 1978 remains the most significant factor in determining the probability of lead exposure in children ages 0-72 months of age.

According to the 2011 American Health Home Survey (AHHS) by HUD, properties built prior to 1960 are 69% likely to have lead-based paint. According to the 2016 American FactFinder, Physical Housing Characteristic for Occupied Housing in Maryland, 55% of all occupied housing in Maryland was built 1979 and prior. This percentage is even more significant in rental housing. Table Six below demonstrates that an estimated 58% of all occupied housing units in Maryland are residential rental units built in 1979 or before. Given these housing characteristics it is understandable why children in Maryland are more likely to be exposed to lead based paint hazards in older housing.

Table Six
Physical Housing Characteristics/Occupied Rental Housing Units in Maryland

Subject	Estimates
Renter Occupied Housing Units	729,709
YEAR STRUCTURE BUILT	
1980 -2014	**42%**
1960 to 1979	**29.5%**
1940 to 1959	**15.5%**
1939 or earlier	**13.0%**

Source -2012-2016 American Community Survey 5-Year Estimates
https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk)

The Department has access to data from the Department of Assessments and Taxation (DAT) that is used to determine specific housing characteristics, such as built date and occupancy type. This data is used to determine if properties are pre-1978 residential rental properties (Affected Properties) that are required to comply with the Act. The data is also used so that the Department can provide owner occupied families with resources for lead abatement grants/loans offered by the Maryland Department of Housing and Community Development.

For CY 2017, the DAT data file and the CLR data file were compared to determine the occupancy status of the family at the time of blood lead test. Within the limitations of completeness and accuracy of both data sets (DAT, CLR) and validity of the assumption, this comparison showed that the percentage of children with blood lead level ≥ 5 µg/dL was within the same range for both owner occupied and rental properties (Table Seven [*see next page*]).

Table Seven
Occupancy Status and Percentage of Children with Blood Lead Level ≥5 µg/dL*

	Occupancy Status					
	Owner Occupancy			Rent Occupancy		
	Number of	Children with BLL ≥5		Number of	Children with BLL ≥5	
COUNTY	Children	Number	Percent	Children	Number	BLL>=5
Allegany	331	19	5.7	792	18	2.3
Anne Arundel	5,978	36	0.6	5,693	35	0.6
Baltimore	12,309	137	1.1	3,973	49	1.2
Baltimore City	7,143	333	4.7	9,420	451	4.8
Calvert	313	3	1.0	594	4	0.7
Caroline	251	6	2.4	462	14	3.0
Carroll	1,530	14	0.9	981	10	1.0
Cecil	593	8	1.3	1,076	17	1.6
Charles	998	10	1.0	1,591	14	0.9
Dorchester	186	5	2.7	456	13	2.9
Frederick	2,522	19	0.8	2,646	30	1.1
Garrett	267	5	1.9	127	1	0.8
Harford	2,420	21	0.9	2,280	34	1.5
Howard	2,438	19	0.8	2,983	35	1.2
Kent	44	1	2.3	159	2	1.3
Montgomery	11,502	72	0.6	13,324	114	0.9
Prince George's	12,009	172	1.4	10,283	157	1.5
Queen Anne's	318	3	0.9	418	4	1.0
Saint Mary's	598	3	0.5	883	8	0.9
Somerset	189	1	0.5	203	5	2.5
Talbot	240	4	1.7	405	5	1.2
Washington	1,268	18	1.4	1,513	24	1.6
Wicomico	736	3	0.4	1,521	30	2.0
Worcester	267	4	1.5	655	12	1.8
Statewide	64,450	916	1.4	62,454	1,086	1.7

*Statewide, the occupancy status of 4,929 children of whom 48 had blood lead level ≥5 µg/dL was unknown and not included in this table.

Medical and Environmental Case Management

The Department's Case Management Guidelines ("Guidelines") require medical case management when a child aged 0-72 months is identified with a first time venous or two capillary blood lead tests of ≥10 µg/dL("Confirmed Case"). Case management consists of comprehensive medical and environmental case management, which are coordinated between the health care provider, local health department, and the Department. Services include outreach and education to the family of the identified child, a comprehensive environmental investigation to identify all potential sources of lead exposure, recommendations for lead hazard remediation, and compliance and enforcement as needed on pre-1978 residential rental units. Identifying all potential sources of lead in the child's environment and preventing further exposure are the most important factors in case management of a child. All home visits are arranged with the family based on the availability of the parent/guardian and in accordance with recommendations identified in the Case Management Guidelines.

When a child is diagnosed as a Confirmed Case and is identified to reside in or frequent a pre-1978 residential rental property, the Department or local health department is required by Law to send a Notice of Elevated Blood Lead Level (Notice of EBL) to the rental property owner. Under the Law, an owner that receives a Notice of EBL must meet the modified risk reduction standard or provide for the temporary relocation of the tenants to a lead free or lead risk reduced unit within 30 days of receipt of the Notice of EBL.

During CY 2017, there were 260 Confirmed Cases that required medical and environmental case management in Maryland. This was an increase of 22 Confirmed Cases when compared to CY 2016 (238). Of the total, there were 179 Confirmed Cases in Maryland counties (excluding Baltimore City). This was an increase of 48 cases compared to the 131 Confirmed Cases in Maryland counties in CY 2016. See Table Eight for medical and environmental case outcomes for Maryland Counties.

Table Eight
Statewide (excluding Baltimore City)
CY 2017: Confirmed Cases-179
Medical and Environmental Case Outcomes

Medical Home Visits			
Completed Home Visit	Telephonic Case Management	Refused Home Visit	Unable to Locate Family
142	14	20	3

Environmental Inspections		
Completed Inspection	Refused Inspection	Unable to Locate
156	20	3

There were a total of 81 Confirmed Cases during CY 2017 in Baltimore City. This was a decrease of 26 cases compared to 107 Confirmed Cases in CY 2016. Baltimore City performs all environmental investigations in response to Confirmed Cases. See Table Nine for medical and environmental case outcomes for Baltimore City.

Table Nine
Baltimore City
CY 2017: Confirmed Cases-81
Medical and Environmental Case Outcomes

Medical Home Visits				
Completed Home Visit	Refused Home Visit	Unable to Locate	Wrong Address	Family Moved
73	0	4	1	3

Environmental Inspections					
Completed Inspection	Refused Inspection	Unable to Locate	No Response	Wrong Address	Family Moved
67	0	1	1	8	4

In CY 2017, of the 179 Confirmed Cases Statewide (excluding Baltimore City), 64% of the children were identified as residing in a rental property and 36% of the children were identified as residing in an owner occupied property. In CY 2017, in Baltimore City, 70% of the children were identified as residing in a rental property and 30% of the children were identified as residing in an owner occupied property. Table Ten provides a breakdown of Confirmed Cases and housing type identified by jurisdiction.

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Table Ten
Property Status of Confirmed Cases
CY 2017: By Jurisdiction

County	Total Cases	Owner-Occupied Pre-50		Owner-Occupied 1950-1977		Owner-Occupied Post-1977		Rental Property Pre-1950		Rental Property 1950-1977		Rental Property Post-1977	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	4	3	75.0	0	0.0	0	0.0	1	25.0	0	0.0	0	0.0
Anne Arundel	8	0	0.0	1	12.5	5	62.5	1	12.5	1	12.5	0	0.0
Baltimore	31	7	22.6	4	12.9	3	**9.7**	1	3.2	10	32.3	6	19.3
Baltimore City	**81**	**23**	**28.4**	**1**	1.2	**0**	0.0	55	**67.9**	**0**	**0.0**	**2**	**2.5**
Calvert	1	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Caroline	4	1	25.0	0	0.0	0	0.0	1	25.0	0	0.0	2	50.0
Carroll	5	1	20.0	0	0.0	2	40.0	2	40.0	0	0.0	0	0.0
Cecil	2	2	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Charles	1	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Dorchester	6	3	50.0	0	0.0	0	0.0	3	50.0	0	0.0	0	0.0
Frederick	9	3	33.3	0	0.0	2	22.2	2	22.2	0	0.0	2	22.2
Garrett	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Harford	3	2	66.7	0	0.0	0	0.0	0	0.0	0	0.0	1	33.3
Howard	11	0	0.0	1	9.1	5	45.4	0	0.0	2	18.2	3	27.3
Kent	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Montgomery	18	0	0.0	4	22.2	2	11.1	0	0.0	10	55.6	2	11.1
Prince George's	65	1	1.5	3	4.6	3	4.6	2	3.1	56	86.2	0	0.0
Queen Anne's	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Saint Mary's	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Somerset	1	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Talbot	1	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
Washington	5	0	0.0	0	0.0	2	40.0	1	20.0	1	20.0	1	20.0
Wicomico	3	1	33.3	0	0.0	0	0.0	1	3.3	0	0.0	1	3.3
Worcester	1	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Counties' Total	**179**	**25**	**14.0**	**14**	**7.8**	**26**	**14.5**	**15**	**8.4**	**81**	**45.2**	**18**	**10.1**
Statewide Total	**260**	**48**	**18.5**	**15**	**5.8**	**26**	**10.0**	**70**	**26.9**	**81**	**31.1**	**20**	**7.7**

Sources of Lead Identified During Environmental Investigations

An environmental investigation performed in response to a Confirmed Case is designed to identify all potential lead sources in the child's environment. While exposure to lead paint hazards continues to affect children in all communities across Maryland, exposure from other sources has been observed. Prince George's County, for example, had 65 of the 179 Confirmed Cases in Maryland Counties (excluding Baltimore City). Of the 65 cases, 49 of the cases were children of refugee families who had relocated to the United States and recently resettled in Maryland. There were also a significant number of cases statewide where cosmetics, such as kohl, and spices purchased outside the U.S. were identified as potential lead hazards during environmental investigations. A breakdown of lead sources, by housing type, that were identified during environmental investigations performed by the Department and Prince George's County can be found in Figures Ten and Eleven. Please note that a variety of sources may contribute to a child's lead exposure. Due to this fact, more than one source of exposure may be reported for each investigation.

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Figure Ten
Lead Sources Identified in Rental Housing
Maryland Counties CY 2017 (Excluding Baltimore City)

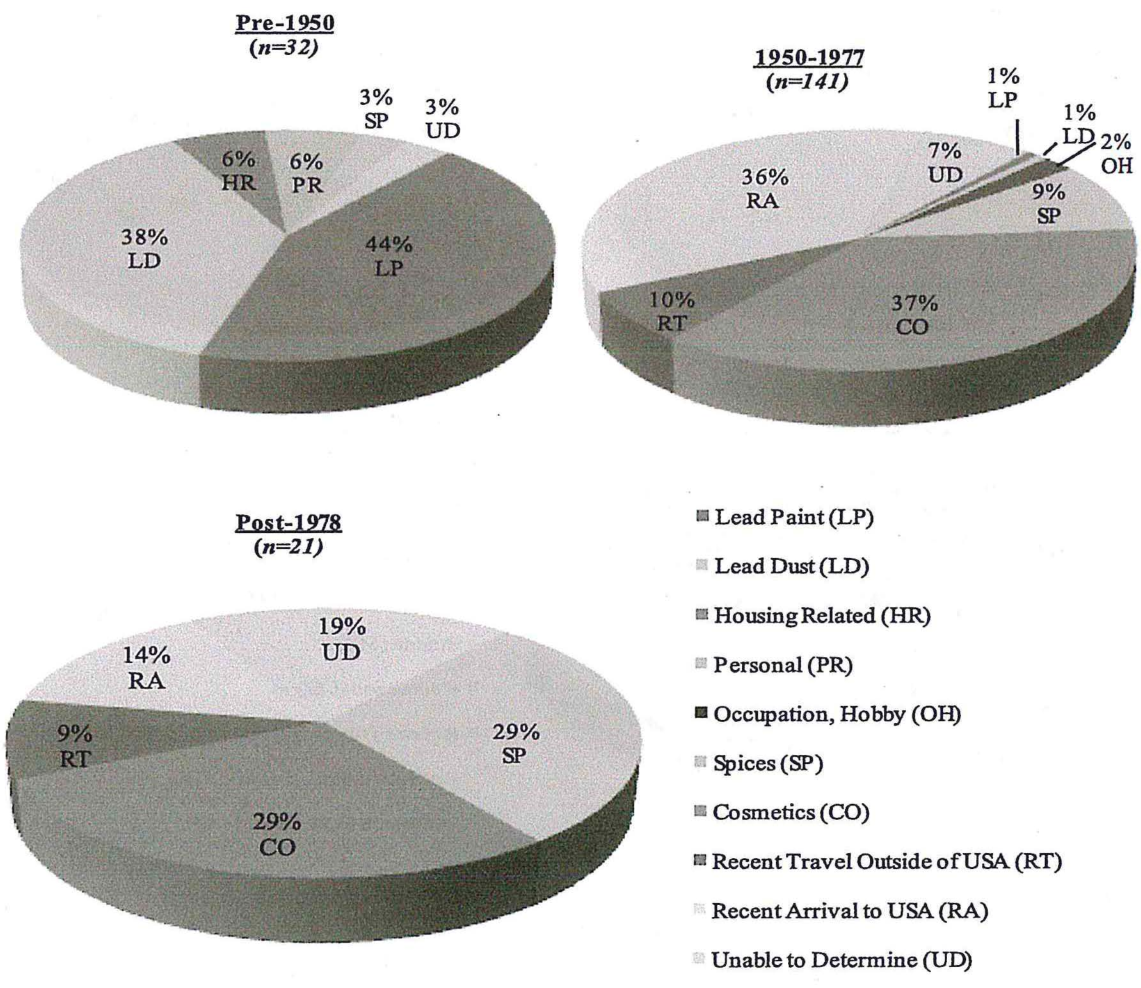


Figure Eleven
Lead Sources Identified in Owner Occupied Housing
Maryland Counties CY 2017 (Excluding Baltimore City)

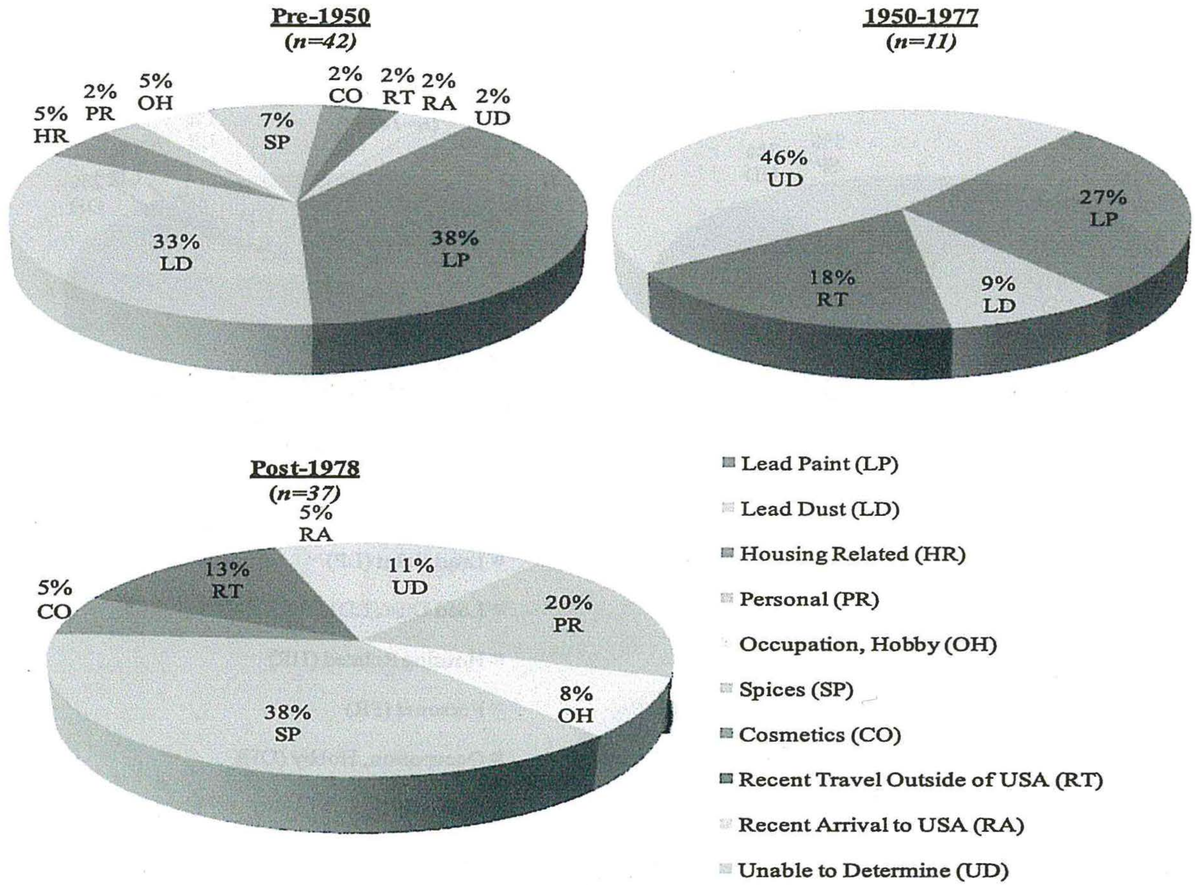
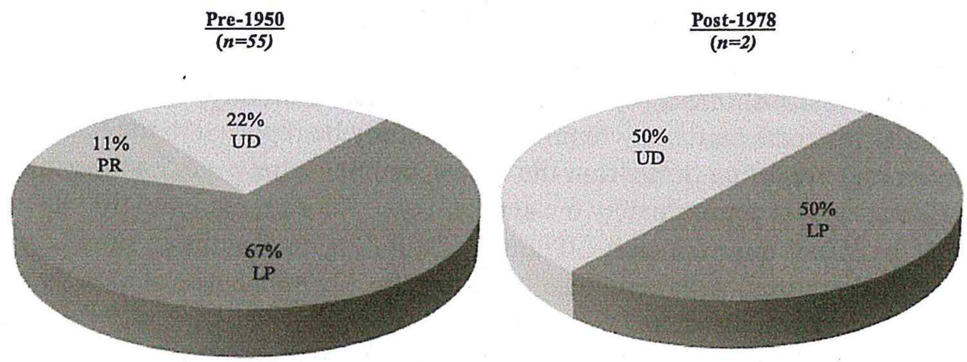


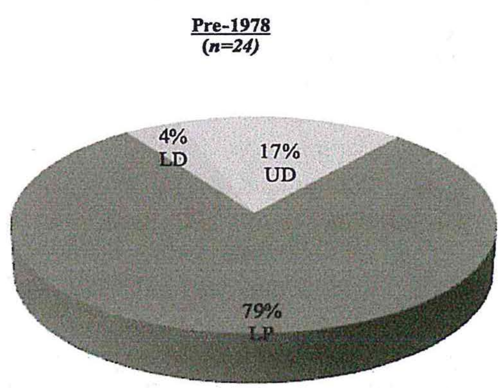
Figure Twelve shows the lead sources that were identified during environmental investigations in Baltimore City in CY 2017 by property type. In CY 2017, there were no children identified with a blood lead level of ≥ 10μg/dL residing in a 1950 -1977 rental unit in Baltimore City.

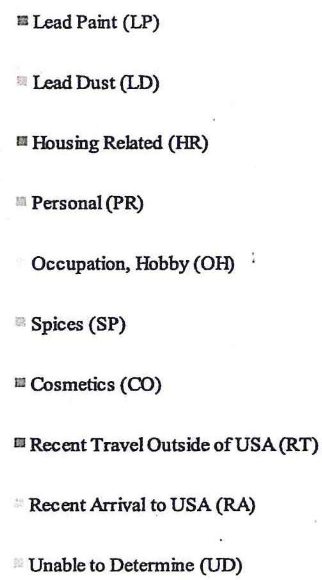
Figure Twelve
Lead Sources Identified in Rental Housing and Owner Occupied Housing
Baltimore City CY 2017

Rental



Lead Source in Owner Occupied





Data Quality

The CLR is maintained in the "Systematic Tracking of Elevated Lead Levels and Remediation" (STELLAR) surveillance system, obtained from the Centers for Disease Control's (CDC), Lead Poisoning Prevention Program. CLR staff work to improve data quality with respect to completeness, timeliness, and accuracy. Staff keep track of laboratory reports daily to make sure laboratories are reporting all blood lead tests no later than biweekly. The law requires blood lead results ≥20 μg/dL to be reported to the Department within 24 hours after a result is known. However, upon CLR request, laboratories have agreed to report the result of all blood lead tests ≥10 μg/dL within 24 hours. With the CDC's blood lead "Reference Level" now at 5μg/dL, some laboratories report blood lead tests at 5-9 μg/dL within 24 hours.

In CY 2017, 64.2% of all blood lead tests were reported to the CLR through a computer generated electronic data file. This is a decrease of more than 12.5 points in this type of reporting when compared with CY 2016 (76.7%). The drop is because of an increase in the number of clinics and establishments using POC Instruments. Currently, the POC Instruments only have the ability to create hard copy reports that can only be reported to the CLR by facsimile. The average reporting time, from the time a sample is drawn to the time the result enters the CLR database, is approximately 6 calendar days. The average time for elevated blood lead results (≥10 μg/dL) is approximately 30 hours. Table Eleven provides a summary of the completeness of data reported with blood lead level results. Completeness of data does not necessarily mean accuracy of the data.

Table Eleven
Completeness of Data for CY 2017

Item	Percent Complete
Child's name	100.0
Date of Birth	100.0
Sex/Gender	98.9
Race	52.5
Ethnicity	50.9
Guardian's name	73.4
Sample type	98.7
Test date	100.0
Blood lead level	100.0
Address (geocoded)	88.2
Telephone number	95.6

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

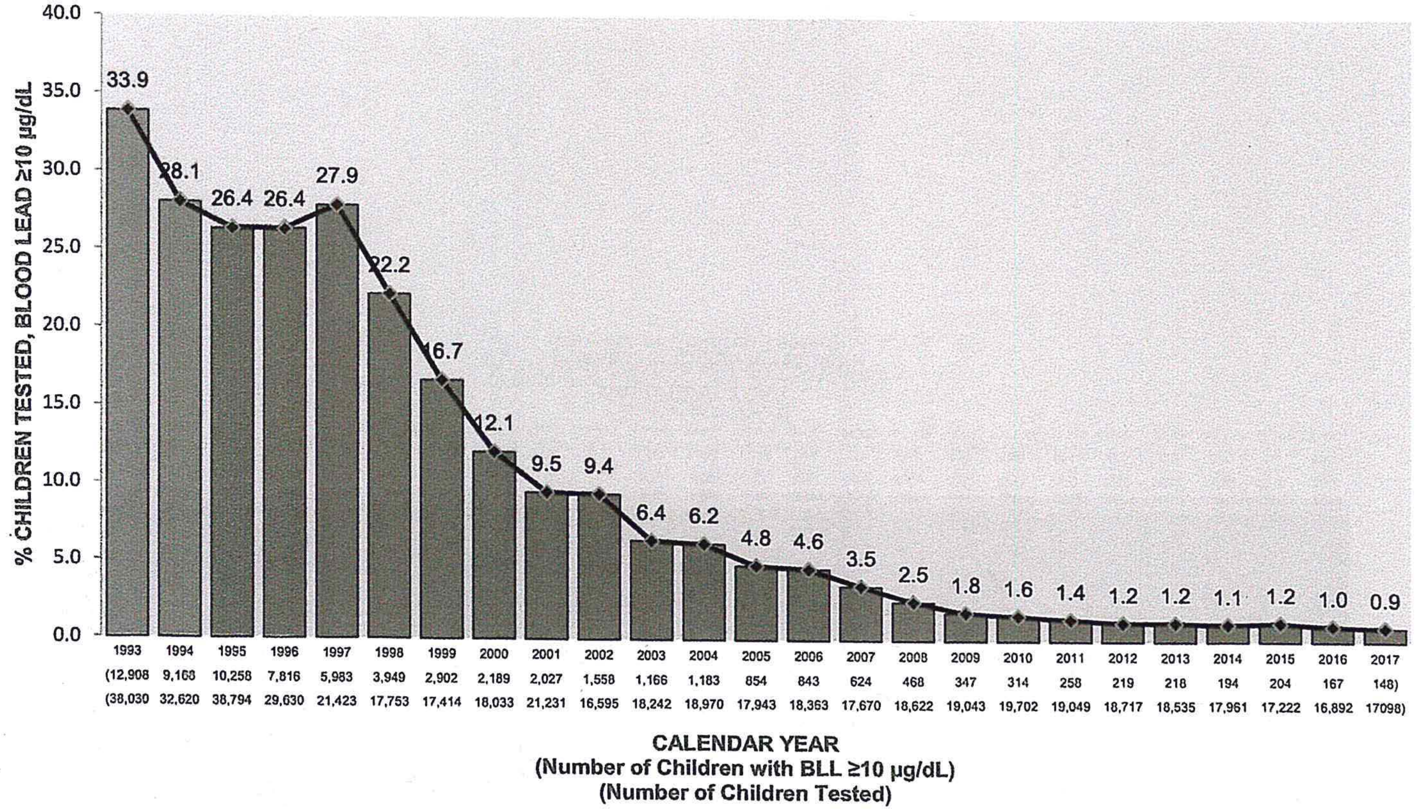
2-Blood lead results ≥20 μg/dL to be reported (fax) within 24 hours after result is known. All other results must be reported no later than two weeks.

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

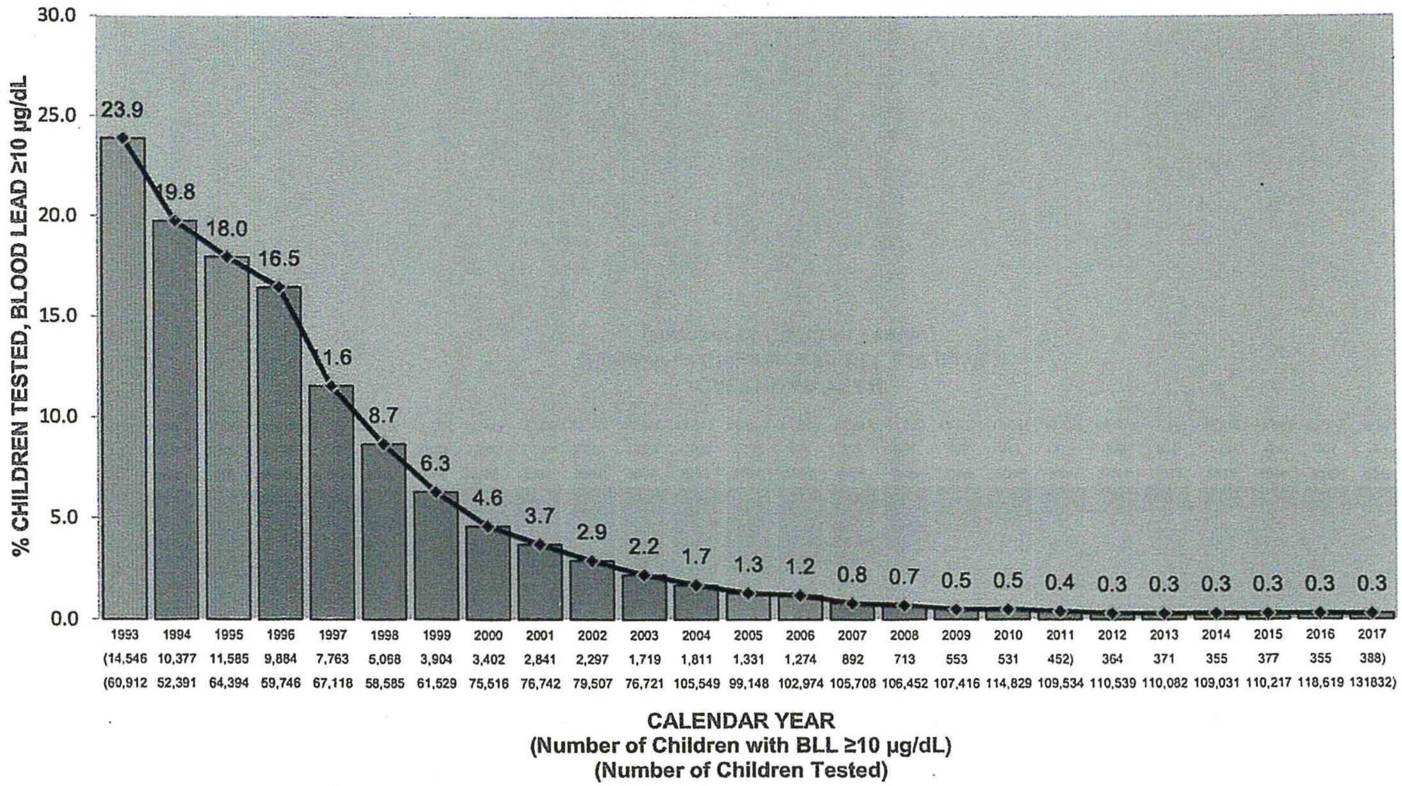
4-Data should be provided electronically.

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

MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD LEAD SURVEILLANCE
BALTIMORE CITY: 1993-2017



MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD LEAD SURVEILLANCE
STATEWIDE: 1993-2017



Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017[1]

Age Group	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany															
0-35 Months	2,608	1,020	39.1	1	0.1	22	2.2	23	2.3	1	0.1	4	0.4	5	0.5
36-72 Months	2,613	130	5.0	7	5.4	2	1.5	9	6.9	2	1.5	0	0.0	2	1.5
Total	5,221	1,150	22.0	8	0.7	24	2.1	32	2.8	3	0.3	4	0.4	7	0.6
Anne Arundel															
0-35 Months	26,269	9,889	37.7	6	0.1	38	0.4	44	0.4	1	0.0	7	0.1	8	0.1
36-72 Months	25,580	2,270	8.9	6	0.3	12	0.5	18	0.8	0	0.0	4	0.2	4	0.2
Total	51,849	12,159	23.5	12	0.1	50	0.4	62	0.5	1	0.0	11	0.1	12	0.1
Baltimore															
0-35 Months	36,528	14,558	39.9	20	0.1	95	0.7	115	0.8	3	0.0	31	0.2	34	0.2
36-72 Months	35,694	3,571	10.0	16	0.5	38	1.1	54	1.5	2	0.1	3	0.1	5	0.1
Total	72,222	18,129	25.1	36	0.2	133	0.7	169	0.9	5	0.0	34	0.2	39	0.2
Baltimore City															
0-35 Months	32,356	12,215	37.8	78	0.6	334	2.7	412	3.4	21	0.2	75	0.6	96	0.8
36-72 Months	28,516	4,883	17.1	125	2.6	104	2.1	229	4.7	27	0.6	25	0.5	52	1.1
Total	60,872	17,098	28.1	203	1.2	438	2.6	641	3.8	48	0.3	100	0.6	148	0.9
Calvert															
0-35 Months	3,638	776	21.3	0	0.0	5	0.6	5	0.6	0	0.0	2	0.3	2	0.3
36-72 Months	4,066	133	3.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	7,704	909	11.8	0	0.0	5	0.6	5	0.6	0	0.0	2	0.2	2	0.2
Caroline															
0-35 Months	1,702	613	36.0	2	0.3	12	2.0	14	2.3	0	0.0	4	0.7	4	0.7
36-72 Months	1,781	137	7.7	1	0.7	1	0.7	2	1.5	0	0.0	0	0.0	0	0.0
Total	3,483	750	21.5	3	0.4	13	1.7	16	2.1	0	0.0	4	0.5	4	0.5

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017[1]

Age Group	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Carroll															
0-35 Months	6,484	2,169	33.5	1	0.1	15	0.7	16	0.7	0	0.0	4	0.2	4	0.2
36-72 Months	7,557	348	4.6	0	0.0	3	0.9	3	0.9	0	0.0	1	0.3	1	0.3
Total	14,041	2,517	17.9	1	0.0	18	0.7	19	0.8	0	0.0	5	0.2	5	0.2
Cecil															
0-35 Months	4,865	1,296	26.6	2	0.2	16	1.2	18	1.4	0	0.0	4	0.3	4	0.3
36-72 Months	4,862	441	9.1	1	0.2	3	0.7	4	0.9	0	0.0	0	0.0	0	0.0
Total	9,727	1,737	17.9	3	0.2	19	1.1	22	1.3	0	0.0	4	0.2	4	0.2
Charles															
0-35 Months	7,101	2,150	30.3	1	0.1	18	0.8	19	0.9	0	0.0	3	0.1	3	0.1
36-72 Months	7,147	478	6.7	1	0.2	1	0.2	2	0.4	0	0.0	0	0.0	0	0.0
Total	14,248	2,628	18.4	2	0.1	19	0.7	21	0.8	0	0.0	3	0.1	3	0.1
Dorchester															
0-35 Months	1,556	520	33.4	0	0.0	5	1.0	5	1.0	1	0.2	3	0.6	4	0.8
36-72 Months	1,453	135	9.3	4	3.0	2	1.5	6	4.4	1	0.7	2	1.5	3	2.2
Total	3,009	655	21.8	4	0.6	7	1.1	11	1.7	2	0.3	5	0.8	7	1.1
Frederick															
0-35 Months	10,918	4,241	38.8	0	0.0	29	0.7	29	0.7	1	0.0	9	0.2	10	0.2
36-72 Months	11,636	996	8.6	2	0.2	6	0.6	8	0.8	1	0.1	2	0.2	3	0.3
Total	22,554	5,237	23.2	2	0.0	35	0.7	37	0.7	2	0.0	11	0.2	13	0.3
Garrett															
0-35 Months	1,144	324	28.3	1	0.3	3	0.9	4	1.2	0	0.0	0	0.0	0	0.0
36-72 Months	1,255	82	6.5	1	1.2	1	1.2	2	2.4	0	0.0	0	0.0	0	0.0
Total	2,399	406	16.9	2	0.5	4	1.0	6	1.5	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 CY 2017[1]

Age Group	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Harford															
0-35 Months	11,064	3,896	35.2	1	0.0	43	1.1	44	1.1	1	0.0	4	0.1	5	0.1
36-72 Months	11,621	935	8.1	0	0.0	7	0.8	7	0.8	0	0.0	0	0.0	0	0.0
Total	22,685	4,831	21.3	1	0.0	50	1.0	51	1.1	1	0.0	4	0.1	5	0.1
Howard															
0-35 Months	12,827	4,603	35.9	5	0.1	29	0.6	34	0.7	1	0.0	10	0.2	11	0.2
36-72 Months	13,740	1,075	7.8	5	0.5	7	0.7	12	1.1	1	0.1	1	0.1	2	0.2
Total	26,567	5,678	21.4	10	0.2	36	0.6	46	0.8	2	0.0	11	0.2	13	0.2
Kent															
0-35 Months	753	170	22.6	0	0.0	2	1.2	2	1.2	0	0.0	0	0.0	0	0.0
36-72 Months	763	33	4.3	0	0.0	1	3.0	1	3.0	0	0.0	0	0.0	0	0.0
Total	1,516	203	13.4	0	0.0	3	1.5	3	1.5	0	0.0	0	0.0	0	0.0
Montgomery															
0-35 Months	48,118	19,884	41.3	12	0.1	105	0.5	117	0.6	3	0.0	23	0.1	26	0.1
36-72 Months	47,728	5,710	12.0	10	0.2	32	0.6	42	0.7	1	0.0	5	0.1	6	0.1
Total	95,846	25,594	26.7	22	0.1	137	0.5	159	0.6	4	0.0	28	0.1	32	0.1
Prince George's															
0-35 Months	44,942	15,690	34.9	10	0.1	143	0.9	153	1.0	8	0.1	47	0.3	55	0.4
36-72 Months	42,347	7,064	16.7	18	0.3	83	1.2	101	1.4	3	0.0	19	0.3	22	0.3
Total	87,289	22,754	26.1	28	0.1	226	1.0	254	1.1	11	0.1	66	0.3	77	0.3
Queen Anne's															
0-35 Months	2,004	618	30.8	0	0.0	5	0.8	5	0.8	0	0.0	1	0.2	1	0.2
36-72 Months	2,160	118	5.5	1	0.9	0	0.0	1	0.9	0	0.0	0	0.0	0	0.0
Total	4,164	736	17.7	1	0.1	5	0.7	6	0.8	0	0.0	1	0.1	1	0.1

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017[1]

Age Group	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Saint Mary's															
0-35 Months	5,619	1,337	23.8	2	0.2	6	0.5	8	0.6	0	0.0	0	0.0	0	0.0
36-72 Months	5,797	193	3.3	2	1.0	1	0.5	3	1.6	0	0.0	0	0.0	0	0.0
Total	11,416	1,530	13.4	4	0.3	7	0.5	11	0.7	0	0.0	0	0.0	0	0.0
Somerset															
0-35 Months	996	381	38.3	1	0.3	2	0.5	3	0.8	0	0.0	1	0.3	1	0.3
36-72 Months	915	63	6.9	1	1.6	1	1.6	2	3.2	0	0.0	0	0.0	0	0.0
Total	1,911	444	23.2	2	0.5	3	0.7	5	1.1	0	0.0	1	0.2	1	0.2
Talbot															
0-35 Months	1,431	551	38.5	1	0.2	6	1.1	7	1.3	1	0.2	1	0.2	2	0.4
36-72 Months	1,421	96	6.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,852	647	22.7	1	0.2	6	0.9	7	1.1	1	0.2	1	0.2	2	0.3
Washington															
0-35 Months	6,734	1,996	29.6	3	0.2	28	1.4	31	1.6	0	0.0	2	0.1	2	0.1
36-72 Months	6,909	819	11.9	1	0.1	5	0.6	6	0.7	0	0.0	3	0.4	3	0.4
Total	13,643	2,815	20.6	4	0.1	33	1.2	37	1.3	0	0.0	5	0.2	5	0.2
Wicomico															
0-35 Months	4,704	1,842	39.2	4	0.2	13	0.7	17	0.9	2	0.1	3	0.2	5	0.3
36-72 Months	4,522	443	9.8	4	0.9	5	1.1	9	2.0	1	0.2	1	0.2	2	0.5
Total	9,226	2,285	24.8	8	0.4	18	0.8	26	1.1	3	0.1	4	0.2	7	0.3
Worcester															
0-35 Months	1,755	759	43.2	3	0.4	8	1.1	11	1.5	0	0.0	1	0.1	1	0.1
36-72 Months	1,732	165	9.5	0	0.0	4	2.4	4	2.4	0	0.0	0	0.0	0	0.0
Total	3,487	924	26.5	3	0.3	12	1.3	15	1.6	0	0.0	1	0.1	1	0.1

Appendix A

Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in CY 2017[1]

Age Group	Population of Children[2]	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	Number	Percent	Number	Percent	Number	Percent	Number	Percent
County Unknown															
0-35 Months		13		0		0		0		0		0		0	
36-72 Months		3		0		0		0		0		0		0	
Total		16		0		0		0		0		0		0	
Statewide															
0-35 Months	276,116	101,511	36.8	154	0.2	982	1.0	1,136	1.1	44	0.0	239	0.2	283	0.3
36-72 Months	271,815	30,321	11.2	206	0.7	319	1.1	525	1.7	39	0.1	66	0.2	105	0.4
Total	547,931	131,832	24.1	360	0.3	1,301	1.0	1,661	1.3	83	0.1	305	0.2	388	0.3

1. The table is based on the selection of the highest blood lead test for each child in CY 2017 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 the blood lead level of 5-9 µg/dL in CY 2017 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 CY 2017. 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 levels ≥10 µg/dL. These children may have carried from 2016 or had a blood lead test with blood lead levels ≥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 first decimal point, the sum of breakdown percentages may not necessarily equal total percentage.

Appendix B
Blood Lead Testing of Children 0-72 Months, and Prevalence and Incidence of Blood Lead Level ≥10 µg/dL: CY's 2010-2017

Calendar Year		Population	Blood Lead Tests Number	Blood Lead Tests Percent	Prevalence Number	Prevalence Percent	Incidence Number	Incidence Percent
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	91539	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**	**0.2**
2016								
	Baltimore City	60,224	16,892	28.0	167	1.0	113	0.7
	Counties	481,770	101,727	21.1	188	0.2	157	0.2
	County Unknown							
	Statewide	**541,994**	**118,619**	**21.9**	**355**	**0.3**	**270**	**0.2**
2017*								
	Baltimore City	60,872	17,098	28.1	148	0.9	100	0.6
	Counties	487,059	114,718	23.6	240	0.2	205	0.2
	County Unknown		16		0		0	
	Statewide	**547,931**	**131,831**	**24.1**	**388**	**0.3**	**305**	**0.2**

***10/25/2018 Update: 2017 Prevalence and Incidence numbers were adjusted to match data reported in Table 2.**

Appendix C
MARYLAND DEPARTMENT OF HEALTH
Maryland Blood Lead Testing Initiative: Interim Progress Report
Evaluation of March 28, 2016 Revision of COMAR 10.11.04

The State of Maryland has several initiatives to increase lead testing and ultimately reduce and eliminate childhood lead poisoning. These initiatives include:

- On April 13, 2015, the Department of Health adopted regulations allowing health care providers increased access to point-of-care testing to screen for elevated levels of lead in children. The amendment to COMAR 10.10.03.02B added whole blood lead testing to the list of tests that qualify for a Letter of Exception, so that providers would have an easier time setting up point of care (POC) testing.
- In October, 2015, the Department of Health released a new "Maryland Testing Targeting Strategy" that established all areas of the state as being "at risk" of lead poisoning. This revised the previous (2000 and 2004) targeting strategies.
- On March 28, 2016, the Department of Health issued final revised regulations (COMAR 10.11.04) requiring providers to test all children born on or after January 1, 2015 at ages 12 and 24 months for lead exposure. Children born before that date were still to be tested under the previous regulation, which requires testing of all children enrolled in Medicaid, all children living in areas identified in the 2004 Testing Targeting Strategy, and children suspected of lead exposure.

In addition to the revised regulations, the Department of Health, together with the Department of the Environment, has conducted extensive outreach to providers and parents through mailings, online bulletins, and outreach through health care organizations. The Department has also created a website and two videos, one for parents and one for providers, on the new testing requirements, and a set of clinical management guidelines that were extensively promulgated to providers across the state.

Interim Results

The statewide average number of children aged 0-72 months tested for lead from CY 2010-2015 was 110,706. In CY 2016, blood lead testing of children 0-72 months was 17.8% higher than the 2010-2015 historical average, at 118,619 children tested. In CY 2017 testing again increased, and was 19.1% higher than the 2010-2015 average, at 131,832 children tested.

Of more import is the statewide increase in the number and percentage of children being tested at ages 12 and 24 months, which has increased from an average of 68,892 (2010-2015) to 90,813 (49.4%, up from 39.7% for the period 2010-2015). Table C-1 provides a detailed breakdown of the change in testing annually, beginning in 2016.

This represents a jurisdiction-level increase in the percentage of children tested for lead in many jurisdictions, as shown in Figure C-1 and Table C-1. The largest increases observed were for Howard, Frederick, Harford and Carroll counties, all of which saw increases in their testing rates of more than 50% from 2010-2015 to 2017. In addition, Anne Arundel, Cecil, Kent, Charles, Montgomery, Queen Anne's, and Calvert counties experienced increases of 25 – 50% in their testing rates.

Table C-1
Change in the Number and Percentage of Children Tested at Age 1 and 2 Years by Jurisdiction in CY2017, Compared with Average Testing Rate Between 2010 – 2015 and CY2016 (Source: Maryland Childhood Lead Registry)

County	Blood Lead Testing: Ages 12 and 24 Months						Percent Change 2017 from Baseline*	Percent Change 2017 from 2016**
	2010-2015		2016		2017			
	Average Number	Average Percent	Number	Percent	Number	Percent		
Allegany	1,099	66.6	1,068	62.8	1,014	59.1	-11.3	-5.9
Anne Arundel	5,960	36.2	7,824	45.2	9,371	53.6	48.1	18.6
Baltimore	11,302	49.6	12,528	52.0	13,114	53.9	8.7	3.7
Baltimore City	11,969	59.8	11,172	53.2	11,264	53.1	-11.2	-0.2
Calvert	478	20.5	637	26.3	723	29.6	44.4	12.5
Caroline	591	56.1	583	51.6	607	53.2	-5.2	3.1
Carroll	882	20.3	1,424	32.3	1,974	44.4	118.7	37.5
Cecil	829	26.7	1,065	32.8	1,102	33.6	25.8	2.4
Charles	1,363	30.9	1,763	37.3	1,928	40.4	30.7	8.3
Dorchester	515	54.7	496	48.7	513	50.0	-8.6	2.7
Frederick	2,048	29.6	3,504	48.0	4,077	55.3	86.8	15.2
Garrett	305	41.2	307	40.8	320	42.0	1.9	2.9
Harford	1,785	24.9	2,676	36.2	3,342	44.8	79.9	23.8
Howard	1,566	18.9	2,816	32.8	4,228	48.8	158.2	48.8
Kent	192	40.8	169	34.4	162	32.6	-20.1	-5.2
Montgomery	10,584	35.0	13,766	43.2	16,292	50.6	44.6	17.1
Prince George's	11,086	39.6	12,540	42.8	13,503	45.7	15.4	6.8
Queen Anne's	397	31.5	575	43.7	603	45.4	44.1	3.9
Saint Mary's	1,068	31.0	1,048	28.3	1,251	33.5	8.1	18.4
Somerset	387	63.4	372	56.1	375	56.1	-11.5	0
Talbot	530	56.5	551	55.5	547	54.5	-3.5	-1.8
Washington	1,719	40.6	1,932	43.1	1,960	43.4	6.9	0.7
Wicomico	1,574	54.3	1,625	52.4	1,795	57.3	5.5	9.4
Worcester	609	54.3	684	58.9	736	62.7	15.5	6.5
Statewide	68,892	39.7	81,125	44.5	90,813	49.4	24.4	11.0

*Change in the percentage of children tested by jurisdiction and statewide in 2017 compared with the average percentage tested by jurisdiction and statewide 2010 – 2015.
** Change in the percentage of children tested by jurisdiction and statewide in 2017 compared with the percentage tested by jurisdiction and statewide 2016.

Change in 2017 Maryland Blood Lead Testing Rates of One and Two Year Old Children by County, Compared with Average Rates of Blood Lead Testing from 2010 - 2015.

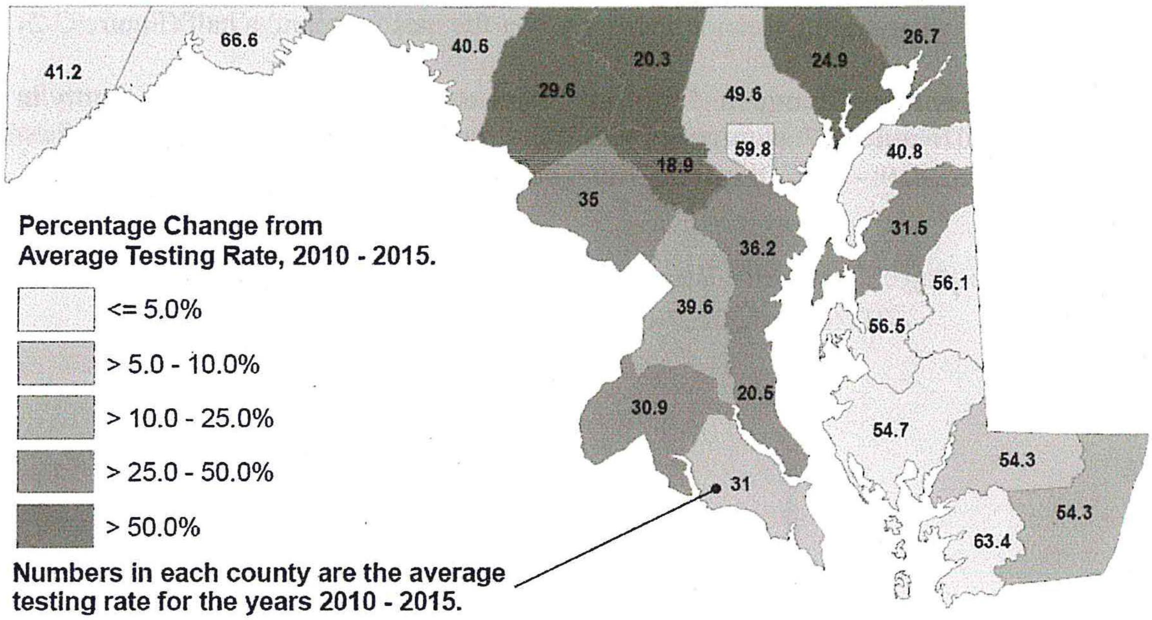


Figure C-1. Percentage Change in Children Tested at 12 and 24 months by County in Calendar Year 2017, compared with the Average Percentage of Children Tested between 2010 – 2015 (Source: Maryland Childhood Lead Registry)

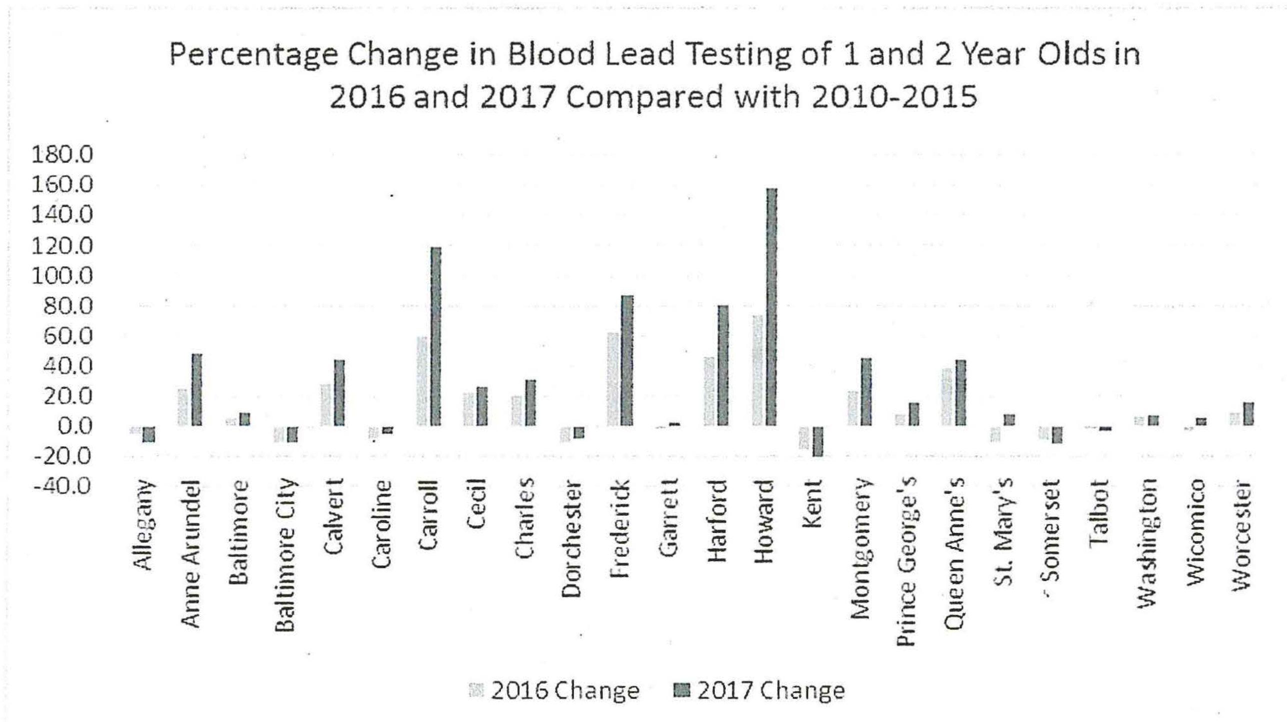
As Figure C-1 shows, in general the most significant increases in testing took place in areas with lower average rates during the period 2010 – 2015. However, while increases were seen in many jurisdictions, there were some jurisdictions that experienced small declines in testing rates (Table C-1). The reason for these declines is unclear, and could be related to normal fluctuation, or other factors. As will be discussed in the section on next steps, below, these jurisdictions represent opportunities for additional outreach to health care providers in conjunction with local health departments and non-governmental organizations

Table C-1 shows that lead testing rates increased statewide and in most jurisdictions from 2016 to 2017. Howard, Harford, and Carol counties continued to see substantial increases in testing in CY 2017 compared to 2016. In addition, several of the counties that had small declines in testing rates from 2010-2015 to 2016, slowed or reversed that trend had had increases in 2017.

Next Steps

In the first full year of universal testing, Maryland continued to make gains in the testing and identification of children exposed to lead. Overall testing rates continued to increase, although there are some areas where testing has not increased over the past year and a half (Figure C-2).

Figure C-2. Percentage Change in Children Tested at 12 and 24 months by County in Calendar Years 2016 and 2017, compared with the Average Percentage of Children Tested between 2010 – 2015 (Source: Maryland Childhood Lead Registry)



Based on these results, the Department of Health and the Department of the Environment are conducting a more detailed analysis of the blood lead testing data, to determine where the priorities for additional outreach need to be focused. The Departments will develop additional outreach strategies for the subsequent years of the initiative. The Department of Health will also explore opportunities to partner with payors, professional societies, and non-governmental organizations in the enhanced outreach efforts.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report Calendar Year 2017
Blood Lead Level (increment of 5 μg/dL) by age, and county of residence
Supplementary Data Tables: Supplement #1

October 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Allegany County

Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	6						6
One Year	499	11	1	1			512
Two Years	487	12	1			2	502
Three Years	56	5	1				62
Four Years	35	3	1				39
Five Years	28	1					29
Total	1,111	32	4	1	0	2	1,150
6-17 Years	63	2					65

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One							
One Year	40	8	1	1			50
Two Years	43	10	1			2	56
Three Years	13	5	1				19
Four Years	7	2	1				10
Five Years	12	1					13
Total	115	26	4	1	0	2	148
6-17 Years	39	1					40

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 μg/dL by Age and County of Residence

(Annual Report 2017)

Anne Arundel County

Criteria: The highest blood lead test

Age Group	Blood Lead Level (μg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	516	2					518
One Year	5,077	33	2		1	1	5,114
Two Years	4,244	9	2		2		4,257
Three Years	870	5	1				876
Four Years	770	11	3				784
Five Years	608	2					610
Total	12,085	62	8	0	3	1	12,159
6-17 Years	613	5	1				619

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (μg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	218						218
One Year	2,268	14	1		1		2,284
Two Years	1,791	3	1		2		1,797
Three Years	648	3	1				652
Four Years	593	8	3				604
Five Years	456	1					457
Total	5,974	29	6	0	3	0	6,012
6-17 Years	524	5					529

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Baltimore County
Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	1,436	8					1,444
One Year	6,761	56	17	2	1	1	6,838
Two Years	6,212	51	8	3		2	6,276
Three Years	1,411	21	2				1,434
Four Years	1,204	18	1	1			1,224
Five Years	897	15		1			913
Total	17,921	169	28	7	1	3	18,129
6-17 Years	1,579	34	2		1		1,616

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	729	3					732
One Year	4,482	36	16	2	1	1	4,538
Two Years	4,072	30	4	3		2	4,111
Three Years	1,151	16	2				1,169
Four Years	994	16	1	1			1,012
Five Years	776	14		1			791
Total	12,204	115	23	7	1	3	12,353
6-17 Years	1,412	29	2		1		1,444

Notes:
- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 μg/dL by Age and County of Residence

(Annual Report 2017)

Baltimore City

Criteria: The highest blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	926	23	3				952
One Year	5,614	172	30	4	4	7	5,831
Two Years	5,167	218	27	11	3	7	5,433
Three Years	1,868	104	13	2	2	6	1,995
Four Years	1,677	84	12	1	2	2	1,778
Five Years	1,057	41	9	2	1		1,110
Total	16,309	642	94	20	12	22	17,099
6-17 Years	2,376	66	5	5	1		2,453

Criteria: The highest venous blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	610	16	2				628
One Year	4,083	148	27	4	4	7	4,273
Two Years	3,890	194	24	11	3	7	4,129
Three Years	1,654	91	13	2	2	6	1,768
Four Years	1,523	79	12	1	2	2	1,619
Five Years	977	39	8	2	1		1,027
Total	12,737	567	86	20	12	22	13,444
6-17 Years	2,164	60	2	5	1		2,232

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Calvert County

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	52	1					53
One Year	430						430
Two Years	287	4	2				293
Three Years	52						52
Four Years	45						45
Five Years	36						36
Total	902	5	2	0	0	0	909
6-17 Years	40						40

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	21						21
One Year	230						230
Two Years	155	4	2				161
Three Years	30						30
Four Years	36						36
Five Years	25						25
Total	497	4	2	0	0	0	503
6-17 Years	36						36

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Caroline County

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	6						6
One Year	304	9	1				314
Two Years	285	5	1	2			293
Three Years	58	2					60
Four Years	46						46
Five Years	31						31
Total	730	16	2	2	0	0	750
6-17 Years	27						27

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	5						5
One Year	120	7	1				128
Two Years	105	4	1	2			112
Three Years	43	2					45
Four Years	32						32
Five Years	24						24
Total	329	13	2	2	0	0	346
6-17 Years	22						22

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 μg/dL by Age and County of Residence

(Annual Report 2017)

Carroll County

Criteria: The highest blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	193	1			1		195
One Year	1,120	8	3				1,131
Two Years	836	7					843
Three Years	145	1		1			147
Four Years	94	1					95
Five Years	105	1					106
Total	2,493	19	3	1	1	0	2,517
6-17 Years	135	1			1		137
Criteria: The highest venous blood lead test							
	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	130	1			1		132
One Year	612	6	3				621
Two Years	422	4					426
Three Years	109			1			110
Four Years	75	1					76
Five Years	71	1					72
Total	1,419	13	3	1	1	0	1,437
6-17 Years	108	1			1		110

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Cecil County

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	193	1					194
One Year	675	10	2	1			688
Two Years	406	7	1				414
Three Years	167	1					168
Four Years	188	3					191
Five Years	82						82
Total	1,711	22	3	1	0	0	1,737
6-17 Years	79			1			80

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	42	1					43
One Year	272	5	1	1			279
Two Years	120	3					123
Three Years	81	1					82
Four Years	76						76
Five Years	51						51
Total	642	10	1	1	0	0	654
6-17 Years	49			1			50

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Charles County

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	218	3		1			222
One Year	989	9	1	1			1,000
Two Years	921	7					928
Three Years	226	1					227
Four Years	137						137
Five Years	113	1					114
Total	2,604	21	1	2	0	0	2,628
6-17 Years	152	1					153

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	61	1					62
One Year	419	1	1				421
Two Years	349	1					350
Three Years	143						143
Four Years	103						103
Five Years	94						94
Total	1,169	3	1	0	0	0	1,173
6-17 Years	128	1					129

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Dorchester County
Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	7						7
One Year	275	4	1				280
Two Years	229	1	1	1		1	233
Three Years	68	2	1			1	72
Four Years	42	4			1		47
Five Years	16						16
Total	637	11	3	1	1	2	655
6-17 Years	19	2		1			22

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	5						5
One Year	166	4	1				171
Two Years	137	1	1	1		1	141
Three Years	65	2	1			1	69
Four Years	39	4			1		44
Five Years	11						11
Total	423	11	3	1	1	2	441
6-17 Years	16	2		1			19

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Frederick County

Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL)						Total
	≤4	5-9	10-14	15-19	20-24	≥25	
Under One	164						164
One Year	2,193	19	4	1			2,217
Two Years	1,845	10	3	1		1	1,860
Three Years	344	6	1			1	352
Four Years	373	2					375
Five Years	268		1				269
Total	5,187	37	9	2	0	2	5,237
6-17 Years	230	3		1			234

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL)						Total
	≤4	5-9	10-14	15-19	20-24	≥25	
Under One	47						47
One Year	619	4		1			624
Two Years	454	4	3	1		1	463
Three Years	184	2	1			1	188
Four Years	192	2					194
Five Years	139		1				140
Total	1,635	12	5	2	0	2	1,656
6-17 Years	160			1			161

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Garrett County

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	4						4
One Year	163	1					164
Two Years	153	3					156
Three Years	41	1					42
Four Years	24	1					25
Five Years	15						15
Total	400	6	0	0	0	0	406
6-17 Years	6						6

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	2						2
One Year	110	1					111
Two Years	99	3					102
Three Years	34	1					35
Four Years	16						16
Five Years	11						11
Total	272	5	0	0	0	0	277
6-17 Years	5						5

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Harford County
Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	541	11	1	1			554
One Year	1,752	18		2			1,772
Two Years	1,554	15				1	1,570
Three Years	345	5					350
Four Years	334	1					335
Five Years	249	1					250
Total	4,775	51	1	3	0	1	4,831
6-17 Years	265	3					268

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	138	1	1				140
One Year	786	4		2			792
Two Years	625	5				1	631
Three Years	243	1					244
Four Years	230	1					231
Five Years	184						184
Total	2,206	12	1	2	0	1	2,222
6-17 Years	212	1					213

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Howard County
Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	371	3	1				375
One Year	2,309	22	4	1	1	1	2,338
Two Years	1,878	9	1	1		1	1,890
Three Years	412	6	1				419
Four Years	362	4	1				367
Five Years	287	2					289
Total	5,619	46	8	2	1	2	5,678
6-17 Years	361	9	2				372

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	175	2	1				178
One Year	1,393	16	4	1	1	1	1,416
Two Years	1,029	7	1	1		1	1,039
Three Years	328	5	1				334
Four Years	311	4					315
Five Years	239	2					241
Total	3,475	36	7	2	1	2	3,523
6-17 Years	321	8	1				330

Notes:
- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Kent County
Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	8						8
One Year	93						93
Two Years	67	2					69
Three Years	14						14
Four Years	14	1					15
Five Years	4						4
Total	200	3	0	0	0	0	203
6-17 Years	6						6

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	6						6
One Year	81						81
Two Years	60	2					62
Three Years	14						14
Four Years	13	1					14
Five Years	3						3
Total	177	3	0	0	0	0	180
6-17 Years	6						6

Notes:
- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Montgomery County
Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	3,562	22	7		1		3,592
One Year	8,183	61	7	1	2	1	8,255
Two Years	7,996	34	5	1		1	8,037
Three Years	1,785	12	4				1,801
Four Years	2,270	14	2				2,286
Five Years	1,607	16					1,623
Total	25,403	159	25	2	3	2	25,594
6-17 Years	1,992	27	3		1		2,023

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	844	6	5				855
One Year	3,092	33	4	1	2		3,132
Two Years	2,590	16	3	1		1	2,611
Three Years	1,153	7	4				1,164
Four Years	1,615	10	2				1,627
Five Years	1,175	11					1,186
Total	10,469	83	18	2	2	1	10,575
6-17 Years	1,680	20	2		1		1,703

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
(Annual Report 2017)

Prince George's County
Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	2,155	24	5	1		2	2,187
One Year	7,026	64	20		1	4	7,115
Two Years	6,301	65	13	5		4	6,388
Three Years	2,301	39	6	4	1		2,351
Four Years	2,634	31	5	2			2,672
Five Years	2,006	31	2	1	1		2,041
Total	22,423	254	51	13	3	10	22,754
6-17 Years	2,708	98	15	2		4	2,827

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	1,243	15	5	1		2	1,266
One Year	5,000	48	20		1	4	5,073
Two Years	4,358	49	13	4		4	4,428
Three Years	1,920	32	6	4	1		1,963
Four Years	2,317	28	4	2			2,351
Five Years	1,782	31	2	1	1		1,817
Total	16,620	203	50	12	3	10	16,898
6-17 Years	2,522	95	14	2		4	2,637

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Queen Anne's County

Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	15						15
One Year	308	5					313
Two Years	289		1				290
Three Years	51	1					52
Four Years	42						42
Five Years	24						24
Total	729	6	1	0	0	0	736
6-17 Years	20						20

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	8						8
One Year	152	3					155
Two Years	118		1				119
Three Years	43	1					44
Four Years	37						37
Five Years	18						18
Total	376	4	1	0	0	0	381
6-17 Years	18						18

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Saint May's County

Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	86						86
One Year	791	5					796
Two Years	452	3					455
Three Years	81	2					83
Four Years	73						73
Five Years	36	1					37
Total	1,519	11	0	0	0	0	1,530
6-17 Years	52	2	1				55

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	13						13
One Year	265	3					268
Two Years	119	1					120
Three Years	34	2					36
Four Years	39						39
Five Years	23	1					24
Total	493	7	0	0	0	0	500
6-17 Years	45	2	1				48

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 μg/dL by Age and County of Residence

(Annual Report 2017)

Somerset County

Criteria: The highest blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	6						6
One Year	196	1	1				198
Two Years	175	2					177
Three Years	37	1					38
Four Years	20	1					21
Five Years	4						4
Total	438	5	1	0	0	0	444
6-17 Years	22						22

Criteria: The highest venous blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	3						3
One Year	170	1	1				172
Two Years	157	2					159
Three Years	34	1					35
Four Years	19	1					20
Five Years	3						3
Total	386	5	1	0	0	0	392
6-17 Years	22						22

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry
Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence
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Talbot County
Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	4						4
One Year	278	5	2				285
Two Years	260	2					262
Three Years	40						40
Four Years	37						37
Five Years	19						19
Total	638	7	2	0	0	0	647
6-17 Years	22	1					23

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	4						4
One Year	141	5	2				148
Two Years	106	2					108
Three Years	35						35
Four Years	24						24
Five Years	14						14
Total	324	7	2	0	0	0	333
6-17 Years	16	1					17

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 μg/dL by Age and County of Residence

(Annual Report 2017)

Washington County

Criteria: The highest blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	36						36
One Year	1,002	16	1				1,019
Two Years	925	15	1				941
Three Years	275	1	2				278
Four Years	307	5	1				313
Five Years	228						228
Total	2,773	37	5	0	0	0	2,815
6-17 Years	102	4					106

Criteria: The highest venous blood lead test

	Blood Lead Level (μg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	20						20
One Year	572	12	1				585
Two Years	415	7	1				423
Three Years	196	1	2				199
Four Years	249	5	1				255
Five Years	170						170
Total	1,622	25	5	0	0	0	1,652
6-17 Years	87	2					89

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Wicomico County

Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	46	1					47
One Year	932	10				1	943
Two Years	842	6	3			1	852
Three Years	223	4	1				228
Four Years	137	2	1				140
Five Years	72	3					75
Total	2,252	26	5	0	0	2	2,285
6-17 Years	147	1					148

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	28	1					29
One Year	675	10				1	686
Two Years	608	5	3			1	617
Three Years	191	4	1				196
Four Years	109	2	1				112
Five Years	54	3					57
Total	1,665	25	5	0	0	2	1,697
6-17 Years	132	1					133

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

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Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Worcester County

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	21	2					23
One Year	387	5					392
Two Years	339	4	1				344
Three Years	74	3					77
Four Years	54	1					55
Five Years	33						33
Total	908	15	1	0	0	0	924
6-17 Years	39						39

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	6	1					7
One Year	180	4					184
Two Years	155	4	1				160
Three Years	49	2					51
Four Years	28	1					29
Five Years	13						13
Total	431	12	1	0	0	0	444
6-17 Years	21						21

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

County Unknown

Criteria: The highest blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	1						1
One Year	7						7
Two Years	5						5
Three Years	1						1
Four Years	1						1
Five Years	1						1
Total	16	0	0	0	0	0	16
6-17 Years	5	1					6

Criteria: The highest venous blood lead test

Age Group	Blood Lead Level (µg/dL) ≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One							
One Year	6						6
Two Years	4						4
Three Years	1						1
Four Years	1						1
Five Years	1						1
Total	13	0	0	0	0	0	13
6-17 Years	5	1					6

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Blood Lead Test of Children 0-72 Months in increment of 5 µg/dL by Age and County of Residence

(Annual Report 2017)

Statewide

Criteria: The highest blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	10,573	102	17	3	2	2	10,699
One Year	47,364	544	97	14	10	16	48,045
Two Years	42,155	491	71	25	5	21	42,768
Three Years	10,945	223	33	7	3	8	11,219
Four Years	10,920	187	27	4	3	2	11,143
Five Years	7,826	115	12	4	2		7,959
Total	129,783	1,662	257	57	25	49	131,833
6-17 Years	11,060	260	29	10	4	4	11,367

Criteria: The highest venous blood lead test

	Blood Lead Level (µg/dL)						
Age Group	≤4	5-9	10-14	15-19	20-24	≥25	Total
Under One	4,358	48	14	1	1	2	4,424
One Year	25,934	373	84	13	10	14	26,428
Two Years	21,981	361	60	24	5	21	22,452
Three Years	8,396	179	33	7	3	8	8,626
Four Years	8,678	165	25	4	3	2	8,877
Five Years	6,326	104	11	4	2		6,447
Total	75,673	1,230	227	53	24	47	77,254
6-17 Years	9,750	230	22	10	4	4	10,020

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead level is in the order of venous, unknown, or capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report Calendar Year 2017

Number and percentage of children with Blood Lead Level ≥5, ≥10, ≥15, ≥20, and ≥25 μg/dL by age, and county of residence

Supplementary Data Tables: Supplement #2

October 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)

By age and county of residence

(Annual Report 2017)

Allegany County

Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	512	13	2.5	2	0.4	1	0.2	0	0.0	0	0.0
Two Years	502	15	3.0	3	0.6	2	0.4	2	0.4	2	0.4
Three Years	62	6	9.7	1	1.6	0	0.0	0	0.0	0	0.0
Four Years	39	4	10.3	1	2.6	0	0.0	0	0.0	0	0.0
Five Years	29	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,150	39	3.4	7	0.6	3	0.3	2	0.2	2	0.2
6-17 Years	65	2	3.1	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	0										
One Year	50	10	20.0	2	4.0	1	2.0	0	0.0	0	0.0
Two Years	56	13	23.2	3	5.4	2	3.6	2	3.6	2	3.6
Three Years	19	6	31.6	1	5.3	0	0.0	0	0.0	0	0.0
Four Years	10	3	30.0	1	10.0	0	0.0	0	0.0	0	0.0
Five Years	13	1	7.7	0	0.0	0	0.0	0	0.0	0	0.0
Total	148	33	22.3	7	4.7	3	2.0	2	1.4	2	1.4
6-17 Years	40	1	2.5	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

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- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Anne Arundel County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	518	2	0.4	0	0.0	0	0.0	0	0.0	0	0.0
One Year	5,114	37	0.7	4	0.1	2	0.0	2	0.0	1	0.0
Two Years	4,257	13	0.3	4	0.1	2	0.0	2	0.0	0	0.0
Three Years	876	6	0.7	1	0.1	0	0.0	0	0.0	0	0.0
Four Years	784	14	1.8	3	0.4	0	0.0	0	0.0	0	0.0
Five Years	610	2	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Total	12,159	74	0.6	12	0.1	4	0.0	4	0.0	1	0.0
6-17 Years	619	6	1.0	1	0.2	0	0.0	0	0.0	0	0.0

Criteria: Highest venous blood lead test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	218	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	2,284	16	0.7	2	0.1	1	0.0	1	0.0	0	0.0
Two Years	1,797	6	0.3	3	0.2	2	0.1	2	0.1	0	0.0
Three Years	652	4	0.6	1	0.2	0	0.0	0	0.0	0	0.0
Four Years	604	11	1.8	3	0.5	0	0.0	0	0.0	0	0.0
Five Years	457	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Total	6,012	38	0.6	9	0.1	3	0.0	3	0.0	0	0.0
6-17 Years	529	5	0.9	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

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- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)

By age and county of residence

(Annual Report 2017)

Baltimore County

Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1,444	8	0.6	0	0.0	0	0.0	0	0.0	0	0.0
One Year	6,838	77	1.1	21	0.3	4	0.1	2	0.0	1	0.0
Two Years	6,276	64	1.0	13	0.2	5	0.1	2	0.0	2	0.0
Three Years	1,434	23	1.6	2	0.1	0	0.0	0	0.0	0	0.0
Four Years	1,224	20	1.6	2	0.2	1	0.1	0	0.0	0	0.0
Five Years	913	16	1.8	1	0.1	1	0.1	0	0.0	0	0.0
Total	18,129	208	1.1	39	0.2	11	0.1	4	0.0	3	0.0
6-17 Years	1,616	37	2.3	3	0.2	1	0.1	1	0.1	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	732	3	0.4	0	0.0	0	0.0	0	0.0	0	0.0
One Year	4,538	56	1.2	20	0.4	4	0.1	2	0.0	1	0.0
Two Years	4,111	39	0.9	9	0.2	5	0.1	2	0.0	2	0.0
Three Years	1,169	18	1.5	2	0.2	0	0.0	0	0.0	0	0.0
Four Years	1,012	18	1.8	2	0.2	1	0.1	0	0.0	0	0.0
Five Years	791	15	1.9	1	0.1	1	0.1	0	0.0	0	0.0
Total	12,353	149	1.2	34	0.3	11	0.1	4	0.0	3	0.0
6-17 Years	1,444	32	2.2	3	0.2	1	0.1	1	0.1	0	0.0

Notes:

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- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Baltimore City
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	952	26	2.7	3	0.3	0	0.0	0	0.0	0	0.0
One Year	5,831	217	3.7	45	0.8	15	0.3	11	0.2	7	0.1
Two Years	5,433	266	4.9	48	0.9	21	0.4	10	0.2	7	0.1
Three Years	1,995	127	6.4	23	1.2	10	0.5	8	0.4	6	0.3
Four Years	1,778	101	5.7	17	1.0	5	0.3	4	0.2	2	0.1
Five Years	1,110	53	4.8	12	1.1	3	0.3	1	0.1	0	0.0
Total	17,099	790	4.6	148	0.9	54	0.3	34	0.2	22	0.1
6-17 Years	2,453	77	3.1	11	0.4	6	0.2	1	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	628	18	2.9	2	0.3	0	0.0	0	0.0	0	0.0
One Year	4,273	190	4.4	42	1.0	15	0.4	11	0.3	7	0.2
Two Years	4,129	239	5.8	45	1.1	21	0.5	10	0.2	7	0.2
Three Years	1,768	114	6.4	23	1.3	10	0.6	8	0.5	6	0.3
Four Years	1,619	96	5.9	17	1.1	5	0.3	4	0.2	2	0.1
Five Years	1,027	50	4.9	11	1.1	3	0.3	1	0.1	0	0.0
Total	13,444	707	5.3	140	1.0	54	0.4	34	0.3	22	0.2
6-17 Years	2,232	68	3.0	8	0.4	6	0.3	1	0.0	0	0.0

Notes:

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- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Calvert County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	53	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
One Year	430	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	293	6	2.0	2	0.7	0	0.0	0	0.0	0	0.0
Three Years	52	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	45	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	36	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	909	7	0.8	2	0.2	0	0.0	0	0.0	0	0.0
6-17 Years	40	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	230	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	161	6	3.7	2	1.2	0	0.0	0	0.0	0	0.0
Three Years	30	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	36	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	503	6	1.2	2	0.4	0	0.0	0	0.0	0	0.0
6-17 Years	36	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percent of children 0-72 months with blood lead level at or above specific level (μg/dL)

By age and county of residence

(Annual Report 2017)

Caroline County

Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	314	10	3.2	1	0.3	0	0.0	0	0.0	0	0.0
Two Years	293	8	2.7	3	1.0	2	0.7	0	0.0	0	0.0
Three Years	60	2	3.3	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	46	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	31	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	750	20	2.7	4	0.5	2	0.3	0	0.0	0	0.0
6-17 Years	27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	128	8	6.3	1	0.8	0	0.0	0	0.0	0	0.0
Two Years	112	7	6.3	3	2.7	2	1.8	0	0.0	0	0.0
Three Years	45	2	4.4	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	32	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	346	17	4.9	4	1.2	2	0.6	0	0.0	0	0.0
6-17 Years	22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Carroll County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	195	2	1.0	1	0.5	1	0.5	1	0.5	0	0.0
One Year	1,131	11	1.0	3	0.3	0	0.0	0	0.0	0	0.0
Two Years	843	7	0.8	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	147	2	1.4	1	0.7	1	0.7	0	0.0	0	0.0
Four Years	95	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	106	1	0.9	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,517	24	1.0	5	0.2	2	0.1	1	0.0	0	0.0
6-17 Years	137	2	1.5	1	0.7	1	0.7	1	0.7	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	132	2	1.5	1	0.8	1	0.8	1	0.8	0	0.0
One Year	621	9	1.4	3	0.5	0	0.0	0	0.0	0	0.0
Two Years	426	4	0.9	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	110	1	0.9	1	0.9	1	0.9	0	0.0	0	0.0
Four Years	76	1	1.3	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	72	1	1.4	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,437	18	1.3	5	0.3	2	0.1	1	0.1	0	0.0
6-17 Years	110	2	1.8	1	0.9	1	0.9	1	0.9	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Cecil County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	194	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0
One Year	688	13	1.9	3	0.4	1	0.1	0	0.0	0	0.0
Two Years	414	8	1.9	1	0.2	0	0.0	0	0.0	0	0.0
Three Years	168	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	191	3	1.6	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	82	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,737	26	1.5	4	0.2	1	0.1	0	0.0	0	0.0
6-17 Years	80	1	1.3	1	1.3	1	1.3	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	43	1	2.3	0	0.0	0	0.0	0	0.0	0	0.0
One Year	279	7	2.5	2	0.7	1	0.4	0	0.0	0	0.0
Two Years	123	3	2.4	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	82	1	1.2	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	76	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	51	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	654	12	1.8	2	0.3	1	0.2	0	0.0	0	0.0
6-17 Years	50	1	2.0	1	2.0	1	2.0	0	0.0	0	0.0

Notes:

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Charles County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	222	4	1.8	1	0.5	1	0.5	0	0.0	0	0.0
One Year	1,000	11	1.1	2	0.2	1	0.1	0	0.0	0	0.0
Two Years	928	7	0.8	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	227	1	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	137	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	114	1	0.9	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,628	24	0.9	3	0.1	2	0.1	0	0.0	0	0.0
6-17 Years	153	1	0.7	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	62	1	1.6	0	0.0	0	0.0	0	0.0	0	0.0
One Year	421	2	0.5	1	0.2	0	0.0	0	0.0	0	0.0
Two Years	350	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	143	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	103	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	94	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,173	4	0.3	1	0.1	0	0.0	0	0.0	0	0.0
6-17 Years	129	1	0.8	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)

By age and county of residence

(Annual Report 2017)

Dorchester County

Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	280	5	1.8	1	0.4	0	0.0	0	0.0	0	0.0
Two Years	233	4	1.7	3	1.3	2	0.9	1	0.4	1	0.4
Three Years	72	4	5.6	2	2.8	1	1.4	1	1.4	1	1.4
Four Years	47	5	10.6	1	2.1	1	2.1	1	2.1	0	0.0
Five Years	16	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	655	18	2.7	7	1.1	4	0.6	3	0.5	2	0.3
6-17 Years	22	3	13.6	1	4.5	1	4.5	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	171	5	2.9	1	0.6	0	0.0	0	0.0	0	0.0
Two Years	141	4	2.8	3	2.1	2	1.4	1	0.7	1	0.7
Three Years	69	4	5.8	2	2.9	1	1.4	1	1.4	1	1.4
Four Years	44	5	11.4	1	2.3	1	2.3	1	2.3	0	0.0
Five Years	11	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	441	18	4.1	7	1.6	4	0.9	3	0.7	2	0.5
6-17 Years	19	3	15.8	1	5.3	1	5.3	0	0.0	0	0.0

Notes:

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Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
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Frederick County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	164	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	2,217	24	1.1	5	0.2	1	0.0	0	0.0	0	0.0
Two Years	1,860	15	0.8	5	0.3	2	0.1	1	0.1	1	0.1
Three Years	352	8	2.3	2	0.6	1	0.3	1	0.3	1	0.3
Four Years	375	2	0.5	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	269	1	0.4	1	0.4	0	0.0	0	0.0	0	0.0
Total	5,237	50	1.0	13	0.2	4	0.1	2	0.0	2	0.0
6-17 Years	234	4	1.7	1	0.4	1	0.4	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	47	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	624	5	0.8	1	0.2	1	0.2	0	0.0	0	0.0
Two Years	463	9	1.9	5	1.1	2	0.4	1	0.2	1	0.2
Three Years	188	4	2.1	2	1.1	1	0.5	1	0.5	1	0.5
Four Years	194	2	1.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	140	1	0.7	1	0.7	0	0.0	0	0.0	0	0.0
Total	1,656	21	1.3	9	0.5	4	0.2	2	0.1	2	0.1
6-17 Years	161	1	0.6	1	0.6	1	0.6	0	0.0	0	0.0

Notes:

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Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
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Garrett County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	164	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	156	3	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	42	1	2.4	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	25	1	4.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	15	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	406	6	1.5	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	111	1	0.9	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	102	3	2.9	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	35	1	2.9	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	16	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	11	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	277	5	1.8	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

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Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
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Harford County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	554	13	2.3	2	0.4	1	0.2	0	0.0	0	0.0
One Year	1,772	20	1.1	2	0.1	2	0.1	0	0.0	0	0.0
Two Years	1,570	16	1.0	1	0.1	1	0.1	1	0.1	1	0.1
Three Years	350	5	1.4	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	335	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	250	1	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Total	4,831	56	1.2	5	0.1	4	0.1	1	0.0	1	0.0
6-17 Years	268	3	1.1	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	140	2	1.4	1	0.7	0	0.0	0	0.0	0	0.0
One Year	792	6	0.8	2	0.3	2	0.3	0	0.0	0	0.0
Two Years	631	6	1.0	1	0.2	1	0.2	1	0.2	1	0.2
Three Years	244	1	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	231	1	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	184	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,222	16	0.7	4	0.2	3	0.1	1	0.0	1	0.0
6-17 Years	213	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

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Howard County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	375	4	1.1	1	0.3	0	0.0	0	0.0	0	0.0
One Year	2,338	29	1.2	7	0.3	3	0.1	2	0.1	1	0.0
Two Years	1,890	12	0.6	3	0.2	2	0.1	1	0.1	1	0.1
Three Years	419	7	1.7	1	0.2	0	0.0	0	0.0	0	0.0
Four Years	367	5	1.4	1	0.3	0	0.0	0	0.0	0	0.0
Five Years	289	2	0.7	0	0.0	0	0.0	0	0.0	0	0.0
Total	5,678	59	1.0	13	0.2	5	0.1	3	0.1	2	0.0
6-17 Years	372	11	3.0	2	0.5	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	178	3	1.7	1	0.6	0	0.0	0	0.0	0	0.0
One Year	1,416	23	1.6	7	0.5	3	0.2	2	0.1	1	0.1
Two Years	1,039	10	1.0	3	0.3	2	0.2	1	0.1	1	0.1
Three Years	334	6	1.8	1	0.3	0	0.0	0	0.0	0	0.0
Four Years	315	4	1.3	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	241	2	0.8	0	0.0	0	0.0	0	0.0	0	0.0
Total	3,523	48	1.4	12	0.3	5	0.1	3	0.1	2	0.1
6-17 Years	330	9	2.7	1	0.3	0	0.0	0	0.0	0	0.0

Notes:

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Kent County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	93	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	69	2	2.9	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	15	1	6.7	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	203	3	1.5	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	81	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	62	2	3.2	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	14	1	7.1	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	180	3	1.7	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

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Montgomery County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	3,592	30	0.8	8	0.2	1	0.0	1	0.0	0	0.0
One Year	8,255	72	0.9	11	0.1	4	0.0	3	0.0	1	0.0
Two Years	8,037	41	0.5	7	0.1	2	0.0	1	0.0	1	0.0
Three Years	1,801	16	0.9	4	0.2	0	0.0	0	0.0	0	0.0
Four Years	2,286	16	0.7	2	0.1	0	0.0	0	0.0	0	0.0
Five Years	1,623	16	1.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	25,594	191	0.7	32	0.1	7	0.0	5	0.0	2	0.0
6-17 Years	2,023	31	1.5	4	0.2	1	0.0	1	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	855	11	1.3	5	0.6	0	0.0	0	0.0	0	0.0
One Year	3,132	40	1.3	7	0.2	3	0.1	2	0.1	0	0.0
Two Years	2,611	21	0.8	5	0.2	2	0.1	1	0.0	1	0.0
Three Years	1,164	11	0.9	4	0.3	0	0.0	0	0.0	0	0.0
Four Years	1,627	12	0.7	2	0.1	0	0.0	0	0.0	0	0.0
Five Years	1,186	11	0.9	0	0.0	0	0.0	0	0.0	0	0.0
Total	10,575	106	1.0	23	0.2	5	0.0	3	0.0	1	0.0
6-17 Years	1,703	23	1.4	3	0.2	1	0.1	1	0.1	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

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Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
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Prince George's County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2,187	32	1.5	8	0.4	3	0.1	2	0.1	2	0.1
One Year	7,115	89	1.3	25	0.4	5	0.1	5	0.1	4	0.1
Two Years	6,388	87	1.4	22	0.3	9	0.1	4	0.1	4	0.1
Three Years	2,351	50	2.1	11	0.5	5	0.2	1	0.0	0	0.0
Four Years	2,672	38	1.4	7	0.3	2	0.1	0	0.0	0	0.0
Five Years	2,041	35	1.7	4	0.2	2	0.1	1	0.0	0	0.0
Total	22,754	331	1.5	77	0.3	26	0.1	13	0.1	10	0.0
6-17 Years	2,827	119	4.2	21	0.7	6	0.2	4	0.1	4	0.1

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1,266	23	1.8	8	0.6	3	0.2	2	0.2	2	0.2
One Year	5,073	73	1.4	25	0.5	5	0.1	5	0.1	4	0.1
Two Years	4,428	70	1.6	21	0.5	8	0.2	4	0.1	4	0.1
Three Years	1,963	43	2.2	11	0.6	5	0.3	1	0.1	0	0.0
Four Years	2,351	34	1.4	6	0.3	2	0.1	0	0.0	0	0.0
Five Years	1,817	35	1.9	4	0.2	2	0.1	1	0.1	0	0.0
Total	16,898	278	1.6	75	0.4	25	0.1	13	0.1	10	0.1
6-17 Years	2,637	115	4.4	20	0.8	6	0.2	4	0.2	4	0.2

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

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Queen Anne's County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	15	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	313	5	1.6	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	290	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0
Three Years	52	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	42	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	736	7	1.0	1	0.1	0	0.0	0	0.0	0	0.0
6-17 Years	20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	155	3	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	119	1	0.8	1	0.8	0	0.0	0	0.0	0	0.0
Three Years	44	1	2.3	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	37	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	18	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	381	5	1.3	1	0.3	0	0.0	0	0.0	0	0.0
6-17 Years	18	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)

By age and county of residence

(Annual Report 2017)

Saint Mary's County

Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	86	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	796	5	0.6	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	455	3	0.7	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	83	2	2.4	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	73	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	37	1	2.7	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,530	11	0.7	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	55	3	5.5	1	1.8	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	13	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	268	3	1.1	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	120	1	0.8	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	36	2	5.6	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	39	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	24	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0
Total	500	7	1.4	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	48	3	6.3	1	2.1	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (μg/dL)
By age and county of residence
(Annual Report 2017)

Somerset County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	198	2	1.0	1	0.5	0	0.0	0	0.0	0	0.0
Two Years	177	2	1.1	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	38	1	2.6	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	21	1	4.8	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	444	6	1.4	1	0.2	0	0.0	0	0.0	0	0.0
6-17 Years	22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	172	2	1.2	1	0.6	0	0.0	0	0.0	0	0.0
Two Years	159	2	1.3	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	35	1	2.9	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	20	1	5.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	392	6	1.5	1	0.3	0	0.0	0	0.0	0	0.0
6-17 Years	22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Talbot County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	285	7	2.5	2	0.7	0	0.0	0	0.0	0	0.0
Two Years	262	2	0.8	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	40	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	37	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	19	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	647	9	1.4	2	0.3	0	0.0	0	0.0	0	0.0
6-17 Years	23	1	4.3	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	148	7	4.7	2	1.4	0	0.0	0	0.0	0	0.0
Two Years	108	2	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	35	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	333	9	2.7	2	0.6	0	0.0	0	0.0	0	0.0
6-17 Years	17	1	5.9	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Washington County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	36	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	1,019	17	1.7	1	0.1	0	0.0	0	0.0	0	0.0
Two Years	941	16	1.7	1	0.1	0	0.0	0	0.0	0	0.0
Three Years	278	3	1.1	2	0.7	0	0.0	0	0.0	0	0.0
Four Years	313	6	1.9	1	0.3	0	0.0	0	0.0	0	0.0
Five Years	228	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,815	42	1.5	5	0.2	0	0.0	0	0.0	0	0.0
6-17 Years	106	4	3.8	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	585	13	2.2	1	0.2	0	0.0	0	0.0	0	0.0
Two Years	423	8	1.9	1	0.2	0	0.0	0	0.0	0	0.0
Three Years	199	3	1.5	2	1.0	0	0.0	0	0.0	0	0.0
Four Years	255	6	2.4	1	0.4	0	0.0	0	0.0	0	0.0
Five Years	170	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,652	30	1.8	5	0.3	0	0.0	0	0.0	0	0.0
6-17 Years	89	2	2.2	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

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- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Wicomico County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	47	1	2.1	0	0.0	0	0.0	0	0.0	0	0.0
One Year	943	11	1.2	1	0.1	1	0.1	1	0.1	1	0.1
Two Years	852	10	1.2	4	0.5	1	0.1	1	0.1	1	0.1
Three Years	228	5	2.2	1	0.4	0	0.0	0	0.0	0	0.0
Four Years	140	3	2.1	1	0.7	0	0.0	0	0.0	0	0.0
Five Years	75	3	4.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	2,285	33	1.4	7	0.3	2	0.1	2	0.1	2	0.1
6-17 Years	148	1	0.7	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	29	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0
One Year	686	11	1.6	1	0.1	1	0.1	1	0.1	1	0.1
Two Years	617	9	1.5	4	0.6	1	0.2	1	0.2	1	0.2
Three Years	196	5	2.6	1	0.5	0	0.0	0	0.0	0	0.0
Four Years	112	3	2.7	1	0.9	0	0.0	0	0.0	0	0.0
Five Years	57	3	5.3	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,697	32	1.9	7	0.4	2	0.1	2	0.1	2	0.1
6-17 Years	133	1	0.8	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Worcester County
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	23	2	8.7	0	0.0	0	0.0	0	0.0	0	0.0
One Year	392	5	1.3	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	344	5	1.5	1	0.3	0	0.0	0	0.0	0	0.0
Three Years	77	3	3.9	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	55	1	1.8	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	33	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	924	16	1.7	1	0.1	0	0.0	0	0.0	0	0.0
6-17 Years	39	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	7	1	14.3	0	0.0	0	0.0	0	0.0	0	0.0
One Year	184	4	2.2	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	160	5	3.1	1	0.6	0	0.0	0	0.0	0	0.0
Three Years	51	2	3.9	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	29	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	13	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	444	13	2.9	1	0.2	0	0.0	0	0.0	0	0.0
6-17 Years	21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

County Unknown
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
One Year	7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	16	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	6	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	0										
One Year	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Two Years	4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Three Years	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Four Years	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Five Years	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	13	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6-17 Years	6	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0

Notes:

- County assignment in the order of available address information is based on census tract or the zip code of the address.
- The selection of the highest blood lead test is in the order of the highest venous, unknown, or capillary. For the report however, the unknowns were counted as capillary.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percent of children 0-72 months with blood lead level at or above specific level (µg/dL)
By age and county of residence
(Annual Report 2017)

Statewide
Criteria: The Highest Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	10,699	126	1.2	24	0.2	7	0.1	4	0.0	2	0.0
One Year	48,045	681	1.4	137	0.3	40	0.1	26	0.1	16	0.0
Two Years	42,768	613	1.4	122	0.3	51	0.1	26	0.1	21	0.0
Three Years	11,219	274	2.4	51	0.5	18	0.2	11	0.1	8	0.1
Four Years	11,143	223	2.0	36	0.3	9	0.1	5	0.0	2	0.0
Five Years	7,959	133	1.7	18	0.2	6	0.1	2	0.0	0	0.0
Total	131,833	2,050	1.6	388	0.3	131	0.1	74	0.1	49	0.0
6-17 Years	11,367	307	2.7	47	0.4	18	0.2	8	0.1	4	0.0

Criteria: Highest Venous Blood Lead Test

Age Group	Number of Children Tested	BLL >=5		BLL >=10		BLL >=15		BLL >=20		BLL >=25	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	4,424	66	1.5	18	0.4	4	0.1	3	0.1	2	0.0
One Year	26,428	494	1.9	121	0.5	37	0.1	24	0.1	14	0.1
Two Years	22,452	471	2.1	110	0.5	50	0.2	26	0.1	21	0.1
Three Years	8,626	230	2.7	51	0.6	18	0.2	11	0.1	8	0.1
Four Years	8,877	199	2.2	34	0.4	9	0.1	5	0.1	2	0.0
Five Years	6,447	121	1.9	17	0.3	6	0.1	2	0.0	0	0.0
Total	77,254	1,581	2.0	351	0.5	124	0.2	71	0.1	47	0.1
6-17 Years	10,020	270	2.7	40	0.4	18	0.2	8	0.1	4	0.0

Notes:

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report Calendar Year 2017
Number and percentage of incident and prevalent cases of
Blood Lead Level ≥10 μg/dL
and
Blood Lead Level 5-9 μg/dL
by age and county of residence
Supplementary Data Tables: Supplement #3

October 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Allegany County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	892	6	0.7		0.0		0.0	0	0.0
One Year	839	512	61.0		0.0	2	0.4	2	0.4
Two Years	877	502	57.2	1	0.2	2	0.4	3	0.6
Three Years	867	62	7.2	1	1.6		0.0	1	1.6
Four Years	922	39	4.2	1	2.6		0.0	1	2.6
Five Years	824	29	3.5		0.0		0.0	0	0.0
Total	5221	1150	22.0	3	0.3	4	0.3	7	0.6
6-17 Years	9647	65	0.1		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	892	6	0.7		0.0		0.0	0	0.0
One Year	839	512	61.0		0.0	11	2.1	11	2.1
Two Years	877	502	57.2	1	0.2	11	2.2	12	2.4
Three Years	867	62	7.2	4	6.5	1	1.6	5	8.1
Four Years	922	39	4.2	2	5.1	1	2.6	3	7.7
Five Years	824	29	3.5	1	3.4		0.0	1	3.4
Total	5,221	1,150	22.0	8	0.7	24	2.1	32	2.8
6-17 Years	9,647	65	0.7	1	1.5	1	1.5	2	3.1

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence
(Annual Report 2017)

Anne Arundel County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 μg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	8789	518	5.9		0.0		0.0	0	0.0
One Year	8789	5114	58.2		0.0	4	0.1	4	0.1
Two Years	8691	4257	49.0	1	0.0	3	0.1	4	0.1
Three Years	8610	876	10.2		0.0	1	0.1	1	0.1
Four Years	8589	784	9.1		0.0	3	0.4	3	0.4
Five Years	8381	610	7.3		0.0		0.0	0	0.0
Total	51849	12159	23.5	1	0.0	11	0.1	12	0.1
6-17 Years	86856	619	0.7		0.0	1	0.2	1	0.2

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 μg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	8,789	518	5.9		0.0	2	0.4	2	0.4
One Year	8,789	5,114	58.2	4	0.1	29	0.6	33	0.6
Two Years	8,691	4,257	49.0	2	0.0	7	0.2	9	0.2
Three Years	8,610	876	10.2	1	0.1	4	0.5	5	0.6
Four Years	8,589	784	9.1	3	0.4	8	1.0	11	1.4
Five Years	8,381	610	7.3	2	0.3		0.0	2	0.3
Total	51,849	12,159	23.5	12	0.1	50	0.4	62	0.5
6-17 Years	86,856	619	0.7	1	0.2	4	0.6	5	0.8

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Baltimore County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	12208	1444	11.8		0.0		0.0	0	0.0
One Year	12329	6838	55.5	2	0.0	19	0.3	21	0.3
Two Years	11991	6276	52.3	1	0.0	12	0.2	13	0.2
Three Years	12068	1434	11.9		0.0	2	0.1	2	0.1
Four Years	11825	1224	10.4	1	0.1	1	0.1	2	0.2
Five Years	11801	913	7.7	1	0.1		0.0	1	0.1
Total	72222	18129	25.1	5	0.0	34	0.2	39	0.2
6-17 Years	122860	1616	1.3	1	0.1	2	0.1	3	0.2

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	12,208	1,444	11.8		0.0	8	0.6	8	0.6
One Year	12,329	6,838	55.5	8	0.1	48	0.7	56	0.8
Two Years	11,991	6,276	52.3	12	0.2	39	0.6	51	0.8
Three Years	12,068	1,434	11.9	5	0.3	16	1.1	21	1.5
Four Years	11,825	1,224	10.4	8	0.7	10	0.8	18	1.5
Five Years	11,801	913	7.7	3	0.3	12	1.3	15	1.6
Total	72,222	18,129	25.1	36	0.2	133	0.7	169	0.9
6-17 Years	122,860	1,616	1.3	11	0.7	23	1.4	34	2.1

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Baltimore City

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	11156	952	8.5		0.0	3	0.3	3	0.3
One Year	10815	5831	53.9	8	0.1	37	0.6	45	0.8
Two Years	10385	5433	52.3	13	0.2	35	0.6	48	0.9
Three Years	9885	1995	20.2	12	0.6	11	0.6	23	1.2
Four Years	9517	1778	18.7	11	0.6	6	0.3	17	1.0
Five Years	9114	1110	12.2	4	0.4	8	0.7	12	1.1
Total	60872	17099	28.1	48	0.3	100	0.6	148	0.9
6-17 Years	87779	2453	2.8	6	0.2	5	0.2	11	0.4

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	11,156	952	8.5		0.0	23	2.4	23	2.4
One Year	10,815	5,831	53.9	12	0.2	160	2.7	172	2.9
Two Years	10,385	5,433	52.3	66	1.2	152	2.8	218	4.0
Three Years	9,885	1,995	20.2	48	2.4	56	2.8	104	5.2
Four Years	9,517	1,778	18.7	45	2.5	39	2.2	84	4.7
Five Years	9,114	1,110	12.2	32	2.9	9	0.8	41	3.7
Total	60,872	17,099	28.1	203	1.2	439	2.6	642	3.8
6-17 Years	87,779	2,453	2.8	32	1.3	34	1.4	66	2.7

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Calvert County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1196	53	4.4		0.0		0.0	0	0.0
One Year	1207	430	35.6		0.0		0.0	0	0.0
Two Years	1235	293	23.7		0.0	2	0.7	2	0.7
Three Years	1297	52	4.0		0.0		0.0	0	0.0
Four Years	1333	45	3.4		0.0		0.0	0	0.0
Five Years	1436	36	2.5		0.0		0.0	0	0.0
Total	7704	909	11.8	0	0.0	2	0.2	2	0.2
6-17 Years	17548	40	0.2		0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1,196	53	4.4		0.0	1	1.9	1	1.9
One Year	1,207	430	35.6		0.0		0.0	0	0.0
Two Years	1,235	293	23.7		0.0	4	1.4	4	1.4
Three Years	1,297	52	4.0		0.0		0.0	0	0.0
Four Years	1,333	45	3.4		0.0		0.0	0	0.0
Five Years	1,436	36	2.5		0.0		0.0	0	0.0
Total	7,704	909	11.8	0	0.0	5	0.6	5	0.6
6-17 Years	17,548	40	0.2		0.0		0.0	0	0.0

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Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Caroline County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	561	6	1.1		0.0		0.0	0	0.0
One Year	569	314	55.2		0.0	1	0.3	1	0.3
Two Years	572	293	51.2		0.0	3	1.0	3	1.0
Three Years	619	60	9.7		0.0		0.0	0	0.0
Four Years	591	46	7.8		0.0		0.0	0	0.0
Five Years	571	31	5.4		0.0		0.0	0	0.0
Total	3483	750	21.5	0	0.0	4	0.5	4	0.5
6-17 Years	5785	27	0.5		0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	561	6	1.1		0.0		0.0	0	0.0
One Year	569	314	55.2	2	0.6	7	2.2	9	2.9
Two Years	572	293	51.2		0.0	5	1.7	5	1.7
Three Years	619	60	9.7	1	1.7	1	1.7	2	3.3
Four Years	591	46	7.8		0.0		0.0	0	0.0
Five Years	571	31	5.4		0.0		0.0	0	0.0
Total	3,483	750	21.5	3	0.4	13	1.7	16	2.1
6-17 Years	5,785	27	0.5		0.0		0.0	0	0.0

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Carroll County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2041	195	9.6		0.0	1	0.5	1	0.5
One Year	2181	1131	51.9		0.0	3	0.3	3	0.3
Two Years	2262	843	37.3		0.0		0.0	0	0.0
Three Years	2354	147	6.2		0.0	1	0.7	1	0.7
Four Years	2503	95	3.8		0.0		0.0	0	0.0
Five Years	2700	106	3.9		0.0		0.0	0	0.0
Total	14041	2517	17.9	0	0.0	5	0.2	5	0.2
6-17 Years	30920	137	0.4		0.0	1	0.7	1	0.7

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2,041	195	9.6		0.0	1	0.5	1	0.5
One Year	2,181	1,131	51.9	1	0.1	7	0.6	8	0.7
Two Years	2,262	843	37.3		0.0	7	0.8	7	0.8
Three Years	2,354	147	6.2		0.0	1	0.7	1	0.7
Four Years	2,503	95	3.8		0.0	1	1.1	1	1.1
Five Years	2,700	106	3.9		0.0	1	0.9	1	0.9
Total	14,041	2,517	17.9	1	0.0	18	0.7	19	0.8
6-17 Years	30,920	137	0.4	1	0.7		0.0	1	0.7

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Cecil County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1587	194	12.2		0.0		0.0	0	0.0
One Year	1662	688	41.4		0.0	3	0.4	3	0.4
Two Years	1616	414	25.6		0.0	1	0.2	1	0.2
Three Years	1617	168	10.4		0.0		0.0	0	0.0
Four Years	1594	191	12.0		0.0		0.0	0	0.0
Five Years	1651	82	5.0		0.0		0.0	0	0.0
Total	9727	1737	17.9	0	0.0	4	0.2	4	0.2
6-17 Years	18184	80	0.4		0.0	1	1.3	1	1.3

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1,587	194	12.2		0.0	1	0.5	1	0.5
One Year	1,662	688	41.4	1	0.1	9	1.3	10	1.5
Two Years	1,616	414	25.6	1	0.2	6	1.4	7	1.7
Three Years	1,617	168	10.4		0.0	1	0.6	1	0.6
Four Years	1,594	191	12.0	1	0.5	2	1.0	3	1.6
Five Years	1,651	82	5.0		0.0		0.0	0	0.0
Total	9,727	1,737	17.9	3	0.2	19	1.1	22	1.3
6-17 Years	18,184	80	0.4		0.0		0.0	0	0.0

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Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Charles County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2331	222	9.5		0.0	1	0.5	1	0.5
One Year	2293	1000	43.6		0.0	2	0.2	2	0.2
Two Years	2477	928	37.5		0.0		0.0	0	0.0
Three Years	2351	227	9.7		0.0		0.0	0	0.0
Four Years	2407	137	5.7		0.0		0.0	0	0.0
Five Years	2389	114	4.8		0.0		0.0	0	0.0
Total	14248	2628	18.4	0	0.0	3	0.1	3	0.1
6-17 Years	28330	153	0.5		0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2,331	222	9.5		0.0	3	1.4	3	1.4
One Year	2,293	1,000	43.6		0.0	9	0.9	9	0.9
Two Years	2,477	928	37.5	1	0.1	6	0.6	7	0.8
Three Years	2,351	227	9.7	1	0.4		0.0	1	0.4
Four Years	2,407	137	5.7		0.0		0.0	0	0.0
Five Years	2,389	114	4.8		0.0	1	0.9	1	0.9
Total	14,248	2,628	18.4	2	0.1	19	0.7	21	0.8
6-17 Years	28,330	153	0.5		0.0	1	0.7	1	0.7

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Dorchester County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	529	7	1.3		0.0		0.0	0	0.0
One Year	511	280	54.8		0.0	1	0.4	1	0.4
Two Years	516	233	45.2	1	0.4	2	0.9	3	1.3
Three Years	503	72	14.3	1	1.4	1	1.4	2	2.8
Four Years	505	47	9.3		0.0	1	2.1	1	2.1
Five Years	445	16	3.6		0.0		0.0	0	0.0
Total	3009	655	21.8	2	0.3	5	0.8	7	1.1
6-17 Years	4851	22	0.5		0.0	1	4.5	1	4.5

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	529	7	1.3		0.0		0.0	0	0.0
One Year	511	280	54.8		0.0	4	1.4	4	1.4
Two Years	516	233	45.2		0.0	1	0.4	1	0.4
Three Years	503	72	14.3	1	1.4	1	1.4	2	2.8
Four Years	505	47	9.3	3	6.4	1	2.1	4	8.5
Five Years	445	16	3.6		0.0		0.0	0	0.0
Total	3,009	655	21.8	4	0.6	7	1.1	11	1.7
6-17 Years	4,851	22	0.5		0.0	2	9.1	2	9.1

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Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Frederick County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	3547	164	4.6		0.0		0.0	0	0.0
One Year	3580	2217	61.9		0.0	5	0.2	5	0.2
Two Years	3791	1860	49.1	1	0.1	4	0.2	5	0.3
Three Years	3817	352	9.2	1	0.3	1	0.3	2	0.6
Four Years	3930	375	9.5		0.0		0.0	0	0.0
Five Years	3889	269	6.9		0.0	1	0.4	1	0.4
Total	22554	5237	23.2	2	0.0	11	0.2	13	0.2
6-17 Years	42464	234	0.6		0.0	1	0.4	1	0.4

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	3,547	164	4.6		0.0		0.0	0	0.0
One Year	3,580	2,217	61.9		0.0	19	0.9	19	0.9
Two Years	3,791	1,860	49.1		0.0	10	0.5	10	0.5
Three Years	3,817	352	9.2		0.0	6	1.7	6	1.7
Four Years	3,930	375	9.5	2	0.5		0.0	2	0.5
Five Years	3,889	269	6.9		0.0		0.0	0	0.0
Total	22,554	5,237	23.2	2	0.0	35	0.7	37	0.7
6-17 Years	42,464	234	0.6	1	0.4	2	0.9	3	1.3

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence

(Annual Report 2017)

Garrett County

				Children with Blood Lead Level ≥10 μg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	383	4	1.0		0.0		0.0	0	0.0
One Year	358	164	45.8		0.0		0.0	0	0.0
Two Years	403	156	38.7		0.0		0.0	0	0.0
Three Years	396	42	10.6		0.0		0.0	0	0.0
Four Years	415	25	6.0		0.0		0.0	0	0.0
Five Years	444	15	3.4		0.0		0.0	0	0.0
Total	2399	406	16.9	0	0.0	0	0.0	0	0.0
6-17 Years	4883	6	0.1		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 μg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	383	4	1.0		0.0		0.0	0	0.0
One Year	358	164	45.8		0.0	1	0.6	1	0.6
Two Years	403	156	38.7	1	0.6	2	1.3	3	1.9
Three Years	396	42	10.6	1	2.4		0.0	1	2.4
Four Years	415	25	6.0		0.0	1	4.0	1	4.0
Five Years	444	15	3.4		0.0		0.0	0	0.0
Total	2,399	406	16.9	2	0.5	4	1.0	6	1.5
6-17 Years	4,883	6	0.1		0.0		0.0	0	0.0

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Harford County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	3609	554	15.4		0.0	2	0.4	2	0.4
One Year	3718	1772	47.7		0.0	2	0.1	2	0.1
Two Years	3737	1570	42.0	1	0.1		0.0	1	0.1
Three Years	3867	350	9.1		0.0		0.0	0	0.0
Four Years	3891	335	8.6		0.0		0.0	0	0.0
Five Years	3863	250	6.5		0.0		0.0	0	0.0
Total	22685	4831	21.3	1	0.0	4	0.1	5	0.1
6-17 Years	43723	268	0.6		0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	3,609	554	15.4		0.0	11	2.0	11	2.0
One Year	3,718	1,772	47.7		0.0	18	1.0	18	1.0
Two Years	3,737	1,570	42.0	1	0.1	14	0.9	15	1.0
Three Years	3,867	350	9.1		0.0	5	1.4	5	1.4
Four Years	3,891	335	8.6		0.0	1	0.3	1	0.3
Five Years	3,863	250	6.5		0.0	1	0.4	1	0.4
Total	22,685	4,831	21.3	1	0.0	50	1.0	51	1.1
6-17 Years	43,723	268	0.6		0.0	3	1.1	3	1.1

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Howard County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	4169	375	9.0		0.0	1	0.3	1	0.3
One Year	4209	2338	55.5	1	0.0	6	0.3	7	0.3
Two Years	4449	1890	42.5		0.0	3	0.2	3	0.2
Three Years	4447	419	9.4		0.0	1	0.2	1	0.2
Four Years	4536	367	8.1	1	0.3		0.0	1	0.3
Five Years	4757	289	6.1		0.0		0.0	0	0.0
Total	26567	5678	21.4	2	0.0	11	0.2	13	0.2
6-17 Years	55199	372	0.7	1	0.3	1	0.3	2	0.5

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	4,169	375	9.0		0.0	3	0.8	3	0.8
One Year	4,209	2,338	55.5	3	0.1	19	0.8	22	0.9
Two Years	4,449	1,890	42.5	2	0.1	7	0.4	9	0.5
Three Years	4,447	419	9.4	3	0.7	3	0.7	6	1.4
Four Years	4,536	367	8.1	2	0.5	2	0.5	4	1.1
Five Years	4,757	289	6.1		0.0	2	0.7	2	0.7
Total	26,567	5,678	21.4	10	0.2	36	0.6	46	0.8
6-17 Years	55,199	372	0.7	2	0.5	7	1.9	9	2.4

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Kent County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	256	8	3.1		0.0		0.0	0	0.0
One Year	258	93	36.0		0.0		0.0	0	0.0
Two Years	239	69	28.9		0.0		0.0	0	0.0
Three Years	254	14	5.5		0.0		0.0	0	0.0
Four Years	249	15	6.0		0.0		0.0	0	0.0
Five Years	260	4	1.5		0.0		0.0	0	0.0
Total	1516	203	13.4	0	0.0	0	0.0	0	0.0
6-17 Years	2438	6	0.2		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	256	8	3.1		0.0		0.0	0	0.0
One Year	258	93	36.0		0.0		0.0	0	0.0
Two Years	239	69	28.9		0.0	2	2.9	2	2.9
Three Years	254	14	5.5		0.0		0.0	0	0.0
Four Years	249	15	6.0		0.0	1	6.7	1	6.7
Five Years	260	4	1.5		0.0		0.0	0	0.0
Total	1,516	203	13.4	0	0.0	3	1.5	3	1.5
6-17 Years	2,438	6	0.2		0.0		0.0	0	0.0

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Montgomery County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	15946	3592	22.5		0.0	8	0.2	8	0.2
One Year	16061	8255	51.4	1	0.0	10	0.1	11	0.1
Two Years	16111	8037	49.9	2	0.0	5	0.1	7	0.1
Three Years	15793	1801	11.4	1	0.1	3	0.2	4	0.2
Four Years	16168	2286	14.1		0.0	2	0.1	2	0.1
Five Years	15767	1623	10.3		0.0		0.0	0	0.0
Total	95846	25594	26.7	4	0.0	28	0.1	32	0.1
6-17 Years	162658	2023	1.2		0.0	4	0.2	4	0.2

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	15,946	3,592	22.5		0.0	22	0.6	22	0.6
One Year	16,061	8,255	51.4	6	0.1	55	0.7	61	0.7
Two Years	16,111	8,037	49.9	6	0.1	28	0.3	34	0.4
Three Years	15,793	1,801	11.4	4	0.2	8	0.4	12	0.7
Four Years	16,168	2,286	14.1	2	0.1	12	0.5	14	0.6
Five Years	15,767	1,623	10.3	4	0.2	12	0.7	16	1.0
Total	95,846	25,594	26.7	22	0.1	137	0.5	159	0.6
6-17 Years	162,658	2,023	1.2	9	0.4	18	0.9	27	1.3

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence

(Annual Report 2017)

Prince George's County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 μg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	15369	2187	14.2		0.0	8	0.4	8	0.4
One Year	14935	7115	47.6	3	0.0	22	0.3	25	0.4
Two Years	14638	6388	43.6	5	0.1	17	0.3	22	0.3
Three Years	14634	2351	16.1	1	0.0	10	0.4	11	0.5
Four Years	14042	2672	19.0	1	0.0	6	0.2	7	0.3
Five Years	13671	2041	14.9	1	0.0	3	0.1	4	0.2
Total	87289	22754	26.1	11	0.0	66	0.3	77	0.3
6-17 Years	140569	2827	2.0	4	0.1	17	0.6	21	0.7

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 μg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	15,369	2,187	14.2		0.0	24	1.1	24	1.1
One Year	14,935	7,115	47.6	2	0.0	62	0.9	64	0.9
Two Years	14,638	6,388	43.6	8	0.1	57	0.9	65	1.0
Three Years	14,634	2,351	16.1	8	0.3	31	1.3	39	1.7
Four Years	14,042	2,672	19.0	3	0.1	28	1.0	31	1.2
Five Years	13,671	2,041	14.9	7	0.3	24	1.2	31	1.5
Total	87,289	22,754	26.1	28	0.1	226	1.0	254	1.1
6-17 Years	140,569	2,827	2.0	9	0.3	89	3.1	98	3.5

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence
(Annual Report 2017)

Queen Anne's County

				Children with Blood Lead Level ≥10 μg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	675	15	2.2		0.0		0.0	0	0.0
One Year	663	313	47.2		0.0		0.0	0	0.0
Two Years	666	290	43.5		0.0	1	0.3	1	0.3
Three Years	692	52	7.5		0.0		0.0	0	0.0
Four Years	715	42	5.9		0.0		0.0	0	0.0
Five Years	753	24	3.2		0.0		0.0	0	0.0
Total	4164	736	17.7	0	0.0	1	0.1	1	0.1
6-17 Years	8359	20	0.2		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 μg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	675	15	2.2		0.0		0.0	0	0.0
One Year	663	313	47.2		0.0	5	1.6	5	1.6
Two Years	666	290	43.5		0.0		0.0	0	0.0
Three Years	692	52	7.5	1	1.9		0.0	1	1.9
Four Years	715	42	5.9		0.0		0.0	0	0.0
Five Years	753	24	3.2		0.0		0.0	0	0.0
Total	4,164	736	17.7	1	0.1	5	0.7	6	0.8
6-17 Years	8,359	20	0.2		0.0		0.0	0	0.0

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Saint Mary's County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1880	86	4.6		0.0		0.0	0	0.0
One Year	1870	796	42.6		0.0		0.0	0	0.0
Two Years	1869	455	24.3		0.0		0.0	0	0.0
Three Years	1978	83	4.2		0.0		0.0	0	0.0
Four Years	1930	73	3.8		0.0		0.0	0	0.0
Five Years	1889	37	2.0		0.0		0.0	0	0.0
Total	11416	1530	13.4	0	0.0	0	0.0	0	0.0
6-17 Years	19173	55	0.3	1	1.8		0.0	1	1.8

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1,880	86	4.6		0.0		0.0	0	0.0
One Year	1,870	796	42.6	2	0.3	3	0.4	5	0.6
Two Years	1,869	455	24.3		0.0	3	0.7	3	0.7
Three Years	1,978	83	4.2	2	2.4		0.0	2	2.4
Four Years	1,930	73	3.8		0.0		0.0	0	0.0
Five Years	1,889	37	2.0		0.0	1	2.7	1	2.7
Total	11,416	1,530	13.4	4	0.3	7	0.5	11	0.7
6-17 Years	19,173	55	0.3		0.0	2	3.6	2	3.6

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Somerset County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	327	6	1.8		0.0		0.0	0	0.0
One Year	325	198	60.9		0.0	1	0.5	1	0.5
Two Years	344	177	51.5		0.0		0.0	0	0.0
Three Years	297	38	12.8		0.0		0.0	0	0.0
Four Years	317	21	6.6		0.0		0.0	0	0.0
Five Years	301	4	1.3		0.0		0.0	0	0.0
Total	1911	444	23.2	0	0.0	1	0.2	1	0.2
6-17 Years	3053	22	0.7		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	327	6	1.8		0.0		0.0	0	0.0
One Year	325	198	60.9		0.0	1	0.5	1	0.5
Two Years	344	177	51.5	1	0.6	1	0.6	2	1.1
Three Years	297	38	12.8		0.0	1	2.6	1	2.6
Four Years	317	21	6.6	1	4.8		0.0	1	4.8
Five Years	301	4	1.3		0.0		0.0	0	0.0
Total	1,911	444	23.2	2	0.5	3	0.7	5	1.1
6-17 Years	3,053	22	0.7		0.0		0.0	0	0.0

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

Talbot County

				Children with Blood Lead Level ≥10 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	428	4	0.9		0.0		0.0	0	0.0
One Year	503	285	56.7	1	0.4	1	0.4	2	0.7
Two Years	500	262	52.4		0.0		0.0	0	0.0
Three Years	446	40	9.0		0.0		0.0	0	0.0
Four Years	466	37	7.9		0.0		0.0	0	0.0
Five Years	509	19	3.7		0.0		0.0	0	0.0
Total	2852	647	22.7	1	0.2	1	0.2	2	0.3
6-17 Years	5265	23	0.4		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 µg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	428	4	0.9		0.0		0.0	0	0.0
One Year	503	285	56.7	1	0.4	4	1.4	5	1.8
Two Years	500	262	52.4		0.0	2	0.8	2	0.8
Three Years	446	40	9.0		0.0		0.0	0	0.0
Four Years	466	37	7.9		0.0		0.0	0	0.0
Five Years	509	19	3.7		0.0		0.0	0	0.0
Total	2,852	647	22.7	1	0.2	6	0.9	7	1.1
6-17 Years	5,265	23	0.4	1	4.3		0.0	1	4.3

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence

(Annual Report 2017)

Washington County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2213	36	1.6		0.0		0.0	0	0.0
One Year	2212	1019	46.1		0.0	1	0.1	1	0.1
Two Years	2309	941	40.8		0.0	1	0.1	1	0.1
Three Years	2366	278	11.7		0.0	2	0.7	2	0.7
Four Years	2210	313	14.2		0.0	1	0.3	1	0.3
Five Years	2333	228	9.8		0.0		0.0	0	0.0
Total	13643	2815	20.6	0	0.0	5	0.2	5	0.2
6-17 Years	23756	106	0.4		0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	2,213	36	1.6		0.0		0.0	0	0.0
One Year	2,212	1,019	46.1		0.0	16	1.6	16	1.6
Two Years	2,309	941	40.8	3	0.3	12	1.3	15	1.6
Three Years	2,366	278	11.7		0.0	1	0.4	1	0.4
Four Years	2,210	313	14.2	1	0.3	4	1.3	5	1.6
Five Years	2,333	228	9.8		0.0		0.0	0	0.0
Total	13,643	2,815	20.6	4	0.1	33	1.2	37	1.3
6-17 Years	23,756	106	0.4	3	2.8	1	0.9	4	3.8

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence

(Annual Report 2017)

Wicomico County

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 μg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1571	47	3.0		0.0		0.0	0	0.0
One Year	1591	943	59.3		0.0	1	0.1	1	0.1
Two Years	1542	852	55.3	2	0.2	2	0.2	4	0.5
Three Years	1612	228	14.1	1	0.4		0.0	1	0.4
Four Years	1410	140	9.9		0.0	1	0.7	1	0.7
Five Years	1500	75	5.0		0.0		0.0	0	0.0
Total	9226	2285	24.8	3	0.1	4	0.2	7	0.3
6-17 Years	15268	148	1.0		0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 μg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	1,571	47	3.0		0.0	1	2.1	1	2.1
One Year	1,591	943	59.3	3	0.3	7	0.7	10	1.1
Two Years	1,542	852	55.3	1	0.1	5	0.6	6	0.7
Three Years	1,612	228	14.1	1	0.4	3	1.3	4	1.8
Four Years	1,410	140	9.9	1	0.7	1	0.7	2	1.4
Five Years	1,500	75	5.0	2	2.7	1	1.3	3	4.0
Total	9,226	2,285	24.8	8	0.4	18	0.8	26	1.1
6-17 Years	15,268	148	1.0		0.0	1	0.7	1	0.7

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence

(Annual Report 2017)

Worcester County

				Children with Blood Lead Level ≥10 μg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	582	23	4.0		0.0		0.0	0	0.0
One Year	592	392	66.2		0.0		0.0	0	0.0
Two Years	581	344	59.2		0.0	1	0.3	1	0.3
Three Years	580	77	13.3		0.0		0.0	0	0.0
Four Years	591	55	9.3		0.0		0.0	0	0.0
Five Years	561	33	5.9		0.0		0.0	0	0.0
Total	3487	924	26.5	0	0.0	1	0.1	1	0.1
6-17 Years	6848	39	0.6		0.0		0.0	0	0.0

				Children with Blood Lead Level 5-9 μg/dL					
	Population	Children Tested		Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
Age Group	of Children	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	582	23	4.0		0.0	2	8.7	2	8.7
One Year	592	392	66.2		0.0	5	1.3	5	1.3
Two Years	581	344	59.2	3	0.9	1	0.3	4	1.2
Three Years	580	77	13.3		0.0	3	3.9	3	3.9
Four Years	591	55	9.3		0.0	1	1.8	1	1.8
Five Years	561	33	5.9		0.0		0.0	0	0.0
Total	3,487	924	26.5	3	0.3	12	1.3	15	1.6
6-17 Years	6,848	39	0.6		0.0		0.0	0	0.0

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of incident and prevalent cases of blood lead level ≥10 µg/dL and Blood Lead Level 5-9 µg/dL by age and county of residence
(Annual Report 2017)

County Unknown

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One		1						0	
One Year		7						0	
Two Years		5						0	
Three Years		1						0	
Four Years		1						0	
Five Years		1						0	
Total		16		0		0		0	
6-17 Years		6			0.0		0.0	0	0.0

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 µg/dL					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One		1						0	
One Year		7						0	
Two Years		5						0	
Three Years		1						0	
Four Years		1						0	
Five Years		1						0	
Total		16						0	
6-17 Years		6				1		1	

Refer to page 27 for terms and definitions

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of incident and prevalent cases of blood lead level ≥10 μg/dL and Blood Lead Level 5-9 μg/dL by age and county of residence

(Annual Report 2017)

Statewide

Age Group	Population of Children	Children Tested		Children with Blood Lead Level ≥10 μg/dL: Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	92245	10699	11.6		0.0	24	0.2	24	0.2
One Year	92070	48045	52.2	16	0.0	121	0.3	137	0.3
Two Years	91801	42768	46.6	28	0.1	94	0.2	122	0.3
Three Years	91350	11219	12.3	18	0.2	33	0.3	51	0.5
Four Years	90656	11143	12.3	15	0.1	21	0.2	36	0.3
Five Years	89809	7959	8.9	6	0.1	12	0.2	18	0.2
Total	547931	131833	24.1	83	0.1	305	0.2	388	0.3
6-17 Years	946416	11367	1.2	13	0.1	34	0.3	47	0.4

Age Group	Population of Children	Children Tested		Children with Blood Lead Level 5-9 μg/dL: Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under One	92,245	10,699	11.6		0.0	102	1.0	102	1.0
One Year	92,070	48,045	52.2	45	0.1	499	1.0	544	1.1
Two Years	91,801	42,768	46.6	109	0.3	382	0.9	491	1.1
Three Years	91,350	11,219	12.3	81	0.7	142	1.3	223	2.0
Four Years	90,656	11,143	12.3	74	0.7	113	1.0	187	1.7
Five Years	89,809	7,959	8.9	51	0.6	64	0.8	115	1.4
Total	547,931	131,833	24.1	360	0.3	1,302	1.0	1,662	1.3
6-17 Years	946,416	11,367	1.2	71	0.6	189	1.7	260	2.3

Terms and definitions:

1. County assignment in the order of available address information is based on census tract or zip code of the address.
2. Population of children was projected from Maryland census population 2010, provided by the Maryland Data Center, Maryland Department of Planning, www.planning.maryland.gov/msdc. Because of inherent problems with projection, the projected population may not correspond to the number of children tested. In such cases, the percentages are removed and replaced with an asterisk'*'.
3. Old cases are based on the number of children who have had a blood lead test with blood lead level ≥10 μg/dL or blood lead test of 5-9 μg/dL in 2016 and had at least one such blood lead test in the past.
4. New cases (Incidence) is based on the number of children with the very first blood lead test with blood lead level ≥10 μg/dL or blood lead level of 5-9 μg/dL in 2017. These children either may have not been tested for lead in the past or all their previous blood lead tests was below 10 μg/dL, or below 5 μg/dL.
5. Prevalence is the number of children with at least one blood lead test with blood lead level ≥10 μg/dL or 5-9 μg/dL in 2017.
6. The selection of blood lead test is based on the highest blood lead level in 2017. If a child had multiple blood lead tests some in 5-9 μg/dL range and some ≥10 μg/dL, the child was counted in the ≥10 category only.
7. Percentages are rounded to the first decimal point. As such the sum of breakdown percentages may not equal total percentage.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report Calendar Year 2017

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 μg/dL and blood lead level 5-9 μg/dL by county of residence (2008-2017)

Supplementary Data Tables: Supplement # 4

October 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Anne Arundel County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	44,090	6,817	15.5	7	0.1	6	0.1
2009	44,471	7,333	16.5	7	0.1	5	0.1
2010	45,643	7,982	17.5	14	0.2	12	0.2
2011	47,391	8,162	17.2	8	0.1	7	0.1
2012	48,260	8,338	17.3	5	0.1	5	0.1
2013	49,109	8,294	16.9	10	0.1	10	0.1
2014	49,907	9,320	18.7	8	0.1	4	0.0
2015	50,640	9,308	18.4	9	0.1	8	0.1
2016	51,288	10,062	19.6	15	0.1	13	0.1
2017	51,849	12,159	23.5	11	0.1	12	0.1

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	44,090	6,817	15.5	123	1.8		
2009	44,471	7,333	16.5	129	1.8		
2010	45,643	7,982	17.5	79	1.0		
2011	47,391	8,162	17.2	75	0.9		
2012	48,260	8,338	17.3	74	0.9	64	0.8
2013	49,109	8,294	16.9	77	0.9	68	0.8
2014	49,907	9,320	18.7	65	0.7	55	0.6
2015	50,640	9,308	18.4	52	0.6	46	0.5
2016	51,288	10,062	19.6	62	0.6	50	0.5
2017	51,849	12,159	23.5	50	0.4	62	0.5

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Baltimore City

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	55,959	18,623	33.3	468	2.5	302	1.6
2009	56,431	19,043	33.7	347	1.8	214	1.1
2010	57,937	19,702	34.0	314	1.6	229	1.2
2011	55,681	19,049	34.2	258	1.4	182	1.0
2012	56,701	18,717	33.0	219	1.2	148	0.8
2013	57,693	18,535	32.1	218	1.2	170	0.9
2014	58,622	17,961	30.6	194	1.1	129	0.7
2015	59,474	17,222	29.0	204	1.2	144	0.8
2016	60,224	16,892	28.0	167	1.0	113	0.7
2017	60,872	17,099	28.1	100	0.6	148	0.9

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	55,959	18,623	33.3	2,551	13.7		
2009	56,431	19,043	33.7	2,254	11.8		
2010	57,937	19,702	34.0	1,764	9.0		
2011	55,681	19,049	34.2	1,436	7.5		
2012	56,701	18,717	33.0	1,224	6.5	800	4.3
2013	57,693	18,535	32.1	1,130	6.1	744	4.0
2014	58,622	17,961	30.6	1,000	5.6	708	3.9
2015	59,474	17,222	29.0	904	5.2	624	3.6
2016	60,224	16,892	28.0	804	4.8	522	3.1
2017	60,872	17,099	28.1	439	2.6	642	3.8

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Caroline County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	2,497	852	34.1	7	0.8	3	0.4
2009	2,516	839	33.3	7	0.8	5	0.6
2010	2,584	870	33.7	9	1.0	6	0.7
2011	3,176	751	23.6	4	0.5	3	0.4
2012	3,234	773	23.9	2	0.3	2	0.3
2013	3,291	681	20.7	5	0.7	5	0.7
2014	3,345	651	19.5	4	0.6	2	0.3
2015	3,396	685	20.2	4	0.6	4	0.6
2016	3,443	740	21.5	2	0.3	1	0.1
2017	3,483	750	21.5	4	0.5	4	0.5

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	2,497	852	34.1	46	5.4		
2009	2,516	839	33.3	47	5.6		
2010	2,584	870	33.7	42	4.8		
2011	3,176	751	23.6	21	2.8		
2012	3,234	773	23.9	14	1.8	13	1.7
2013	3,291	681	20.7	15	2.2	10	1.5
2014	3,345	651	19.5	10	1.5	9	1.4
2015	3,396	685	20.2	12	1.8	9	1.3
2016	3,443	740	21.5	13	1.8	9	1.2
2017	3,483	750	21.5	13	1.7	16	2.1

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Cecil County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	7,965	1,265	15.9	6	0.5	4	0.3
2009	8,030	1,212	15.1	4	0.3	2	0.2
2010	8,245	1,302	15.8	1	0.1	0	0.0
2011	8,884	1,132	12.7	1	0.1	1	0.1
2012	9,047	1,221	13.5	0	0.0	0	0.0
2013	9,206	1,503	16.3	4	0.3	4	0.3
2014	9,356	1,473	15.7	4	0.3	2	0.1
2015	9,496	1,435	15.1	2	0.1	2	0.1
2016	9,621	1,544	16.0	3	0.2	3	0.2
2017	9,727	1,737	17.9	4	0.2	4	0.2

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	7,965	1,265	15.9	42	3.3		
2009	8,030	1,212	15.1	39	3.2		
2010	8,245	1,302	15.8	21	1.6		
2011	8,884	1,132	12.7	17	1.5		
2012	9,047	1,221	13.5	14	1.1	12	1.0
2013	9,206	1,503	16.3	21	1.4	19	1.3
2014	9,356	1,473	15.7	22	1.5	22	1.5
2015	9,496	1,435	15.1	29	2.0	24	1.7
2016	9,621	1,544	16.0	22	1.4	19	1.2
2107	9,727	1,737	17.9	19	1.1	22	1.3

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Dorchester County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	2,266	680	30.0	9	1.3	5	0.7
2009	2,287	730	31.9	3	0.4	2	0.3
2010	2,346	774	33.0	5	0.6	4	0.5
2011	2,747	681	24.8	1	0.1	0	0.0
2012	2,797	694	24.8	1	0.1	1	0.1
2013	2,846	676	23.8	1	0.1	1	0.1
2014	2,892	642	22.2	3	0.5	2	0.3
2015	2,937	630	21.5	1	0.2	1	0.2
2016	2,977	635	21.3	2	0.3	2	0.3
2017	3,009	655	21.8	5	0.8	7	1.1

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	2,266	680	30.0	45	6.6		
2009	2,287	730	31.9	47	6.4		
2010	2,346	774	33.0	29	3.7		
2011	2,747	681	24.8	12	1.8		
2012	2,797	694	24.8	18	2.6	15	2.2
2013	2,846	676	23.8	15	2.2	13	1.9
2014	2,892	642	22.2	15	2.3	13	2.0
2015	2,937	630	21.5	14	2.2	9	1.4
2016	2,977	635	21.3	14	2.2	12	1.9
2017	3,009	655	21.8	7	1.1	11	1.7

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Garrett County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	2,468	479	19.4	2	0.4	1	0.2
2009	2,490	473	19.0	2	0.4	2	0.4
2010	2,555	517	20.2	1	0.2	1	0.2
2011	2,185	438	20.0	3	0.7	3	0.7
2012	2,225	427	19.2	1	0.2	0	0.0
2013	2,265	401	17.7	0	0.0	0	0.0
2014	2,302	464	20.2	1	0.2	1	0.2
2015	2,339	394	16.8	0	0.0	0	0.0
2016	2,372	393	16.6	1	0.3	1	0.3
2017	2,399	406	16.9	0	0.0	0	0.0

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	2,468	479	19.4	18	3.8		
2009	2,490	473	19.0	29	6.1		
2010	2,555	517	20.2	14	2.7		
2011	2,185	438	20.0	9	2.1		
2012	2,225	427	19.2	6	1.4	5	1.2
2013	2,265	401	17.7	8	2.0	7	1.7
2014	2,302	464	20.2	4	0.9	3	0.6
2015	2,339	394	16.8	1	0.3	1	0.3
2016	2,372	393	16.6	5	1.3	5	1.3
2017	2,399	406	16.9	4	1.0	6	1.5

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 μg/dL and blood lead level 5-9 μg/dL by county of residence

Howard County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 μg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	24,777	2,493	10.1	5	0.2	4	0.2
2009	24,990	2,503	10.0	1	0.0	1	0.0
2010	25,645	2,631	10.3	3	0.1	2	0.1
2011	24,261	2,558	10.5	7	0.3	6	0.2
2012	24,707	2,500	10.1	6	0.2	3	0.1
2013	25,144	2,487	9.9	3	0.1	3	0.1
2014	25,557	2,387	9.3	3	0.1	3	0.1
2015	25,937	2,594	10.0	4	0.2	2	0.1
2016	26,276	3,844	14.6	11	0.3	8	0.2
2017	26,567	5,678	21.4	11	0.2	13	0.2

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 μg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	24,777	2,493	10.1	45	1.8		
2009	24,990	2,503	10.0	45	1.8		
2010	25,645	2,631	10.3	27	1.0		
2011	24,261	2,558	10.5	20	0.8		
2012	24,707	2,500	10.1	25	1.0	24	1.0
2013	25,144	2,487	9.9	23	0.9	21	0.8
2014	25,557	2,387	9.3	29	1.2	27	1.1
2015	25,937	2,594	10.0	30	1.2	27	1.0
2016	26,276	3,844	14.6	26	0.7	25	0.7
2017	26,567	5,678	21.4	36	0.6	46	0.8

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Montgomery County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	80,262	18,587	23.2	36	0.2	25	0.1
2009	80,950	18,200	22.5	25	0.1	20	0.1
2010	83,089	20,961	25.2	30	0.1	26	0.1
2011	87,595	19,843	22.7	36	0.2	32	0.2
2012	89,202	20,515	23.0	24	0.1	15	0.1
2013	90,774	20,308	22.4	26	0.1	24	0.1
2014	92,252	19,308	20.9	19	0.1	16	0.1
2015	93,606	19,989	21.4	32	0.2	26	0.1
2016	94,806	22,392	23.6	31	0.1	25	0.1
2017	95,846	25,594	26.7	28	0.1	32	0.1

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	80,262	18,587	23.2	260	1.4		
2009	80,950	18,200	22.5	248	1.4		
2010	83,089	20,961	25.2	242	1.2		
2011	87,595	19,843	22.7	162	0.8		
2012	89,202	20,515	23.0	169	0.8	151	0.7
2013	90,774	20,308	22.4	175	0.9	159	0.8
2014	92,252	19,308	20.9	133	0.7	120	0.6
2015	93,606	19,989	21.4	147	0.7	134	0.7
2016	94,806	22,392	23.6	180	0.8	165	0.7
2017	95,846	25,594	26.7	137	0.5	159	0.6

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Queen Anne's County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	3,583	594	16.6	1	0.2	1	0.2
2009	3,614	607	16.8	4	0.7	4	0.7
2010	3,709	573	15.4	4	0.7	2	0.3
2011	3,798	475	12.5	2	0.4	2	0.4
2012	3,868	494	12.8	2	0.4	2	0.4
2013	3,936	444	11.3	2	0.5	2	0.5
2014	4,000	634	15.9	2	0.3	1	0.2
2015	4,063	626	15.4	0	0.0	0	0.0
2016	4,119	668	16.2	2	0.3	2	0.3
2017	4,164	736	17.7	1	0.1	1	0.1

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	3,583	594	16.6	13	2.2		
2009	3,614	607	16.8	17	2.8		
2010	3,709	573	15.4	11	1.9		
2011	3,798	475	12.5	7	1.5		
2012	3,868	494	12.8	13	2.6	13	2.6
2013	3,936	444	11.3	5	1.1	3	0.7
2014	4,000	634	15.9	8	1.3	8	1.3
2015	4,063	626	15.4	9	1.4	8	1.3
2016	4,119	668	16.2	5	0.7	4	0.6
2017	4,164	736	17.7	5	0.7	6	0.8

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 μg/dL and blood lead level 5-9 μg/dL by county of residence

Somerset County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 μg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	1,521	522	34.3	2	0.4	2	0.4
2009	1,533	497	32.4	4	0.8	3	0.6
2010	1,575	517	32.8	1	0.2	1	0.2
2011	1,742	549	31.5	2	0.4	1	0.2
2012	1,774	608	34.3	2	0.3	2	0.3
2013	1,805	564	31.2	4	0.7	4	0.7
2014	1,834	526	28.7	2	0.4	2	0.4
2015	1,863	514	27.6	3	0.6	2	0.4
2016	1,892	449	23.7	3	0.7	3	0.7
2017	1,911	444	23.2	1	0.2	1	0.2

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 μg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	1,521	522	34.3	30	5.7		
2009	1,533	497	32.4	17	3.4		
2010	1,575	517	32.8	16	3.1		
2011	1,742	549	31.5	10	1.8		
2012	1,774	608	34.3	18	3.0	13	2.1
2013	1,805	564	31.2	4	0.7	3	0.5
2014	1,834	526	28.7	9	1.7	8	1.5
2015	1,863	514	27.6	9	1.8	8	1.6
2016	1,892	449	23.7	6	1.3	3	0.7
2017	1,911	444	23.2	3	0.7	5	1.1

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program: Childhood Lead Registry

Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Washington County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	11,113	3,041	27.4	13	0.4	11	0.4
2009	11,207	3,006	26.8	9	0.3	9	0.3
2010	11,503	2,544	22.1	9	0.4	6	0.2
2011	12,462	2,691	21.6	12	0.4	10	0.4
2012	12,691	2,675	21.1	0	0.0	0	0.0
2013	12,915	2,714	21.0	7	0.3	7	0.3
2014	13,126	2,699	20.6	6	0.2	5	0.2
2015	13,323	2,667	20.0	6	0.2	5	0.2
2016	13,495	2,822	20.9	8	0.3	7	0.2
2017	13,643	2,815	20.6	5	0.2	5	0.2

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	11,113	3,041	27.4	402	13.2		
2009	11,207	3,006	26.8	362	12.0		
2010	11,503	2,544	22.1	129	5.1		
2011	12,462	2,691	21.6	154	5.7		
2012	12,691	2,675	21.1	119	4.4	102	3.8
2013	12,915	2,714	21.0	59	2.2	51	1.9
2014	13,126	2,699	20.6	84	3.1	77	2.9
2015	13,323	2,667	20.0	40	1.5	35	1.3
2016	13,495	2,822	20.9	42	1.5	32	1.1
2017	13,643	2,815	20.6	33	1.2	37	1.3

Refer to page 27 for notes and explanations.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Number and percentage of children 0-72 months old tested for lead, with number and percentage of new (incident) and existing (prevalent) cases of blood lead level ≥10 µg/dL and blood lead level 5-9 µg/dL by county of residence

Worcester County

Calendar Year	Population of Children	Children Tested		Blood Lead Level ≥10 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	3,148	910	28.9	5	0.5	3	0.3
2009	3,177	850	26.8	2	0.2	1	0.1
2010	3,259	900	27.6	2	0.2	2	0.2
2011	3,182	877	27.6	2	0.2	2	0.2
2012	3,240	856	26.4	2	0.2	2	0.2
2013	3,297	830	25.2	3	0.4	3	0.4
2014	3,351	746	22.3	1	0.1	0	0.0
2015	3,403	735	21.6	0	0.0	0	0.0
2016	3,448	834	24.2	2	0.2	2	0.2
2017	3,487	924	26.5	1	0.1	1	0.1

Calendar Year	Population of Children	Children Tested		Blood Lead Level 5-9 µg/dL			
				Prevalence Cases		Incidence Cases	
		Number	Percent	Number	Percent	Number	Percent
2008	3,148	910	28.9	42	4.6		
2009	3,177	850	26.8	25	2.9		
2010	3,259	900	27.6	15	1.7		
2011	3,182	877	27.6	9	1.0		
2012	3,240	856	26.4	7	0.8	6	0.7
2013	3,297	830	25.2	10	1.2	10	1.2
2014	3,351	746	22.3	10	1.3	9	1.2
2015	3,403	735	21.6	6	0.8	6	0.8
2016	3,448	834	24.2	25	3.0	21	2.5
2017	3,487	924	26.5	12	1.3	15	1.6

Refer to page 27 for notes and explanations.

3. The term "Incidence" is based on number of children with the very first given blood lead level in a given period of time.
4. In March 2012, CDC adopted the blood lead level of 5 µg/dL as "Reference Value". To accommodate this revision, from 2012 forward the prevalence and incidence of blood lead level 5-9 µg/dL were added to this supplementary data table.
5. Numbers are based on number of children tested. For children with multiple tests in a calendar year the highest blood lead test in the order of venous, unknown, or capillary was selected. As such a child who is counted under "Blood Lead Level ≥10" has not been counted under "Blood Lead Level 5-9" even if the child had a blood lead test in that category in that calendar year.
6. County assignment is based on child's address census tract or the zip code. Reports with no or incomplete address were assumed to be from Maryland children with county unknown.
7. Some reports necessarily did not have any address information to be used for county assignment (there were 16 such records for 2017). These reports were counted as "County Unknown" and are not included in this supplement. As such sum of county totals may not equal statewide total

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Blood Lead Surveillance in Maryland

Annual Report Calendar Year 2017
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017
Supplementary Data Tables: Supplement #5

October 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

	2013			2013			2015			2016			2017		
	Population of	Children Tested		Population of	Children Tested		Population of	Children Tested		Population of	Children Tested		Population of	Children Tested	
Age Group	Children	Number	Percent	Children	Number	Percent	Children	Number	Percent	Children	Number	Percent	Children	Number	Percent
Allegany County															
Under One	858	21	2.4	868	27	3.1	878	26	3.0	886	13	1.5	892	6	0.7
One Year	802	555	69.2	813	548	67.4	823	600	72.9	832	570	68.5	839	512	61.0
Two Years	832	483	58.1	845	542	64.1	857	545	63.6	868	498	57.4	877	502	57.2
Three Years	817	57	7.0	831	58	7.0	845	43	5.1	857	40	4.7	867	62	7.2
Four Years	864	62	7.2	880	57	6.5	896	47	5.2	910	41	4.5	922	39	4.2
Five Years	767	32	4.2	782	30	3.8	797	24	3.0	811	38	4.7	824	29	3.5
Total	**4,939**	**1,210**	**24.5**	**5,019**	**1,262**	**25.1**	**5,096**	**1,285**	**25.2**	**5,164**	**1,200**	**23.2**	**5,221**	**1,150**	**22.0**
Anne Arundel County															
Under One	8,458	458	5.4	8,562	575	6.7	8,652	578	6.7	8,728	434	5.0	8,789	518	5.9
One Year	8,404	3,359	40.0	8,522	3,961	46.5	8,626	3,962	45.9	8,714	4,433	50.9	8,789	5,114	58.2
Two Years	8,258	2,341	28.3	8,387	2,715	32.4	8,503	2,892	34.0	8,605	3,391	39.4	8,691	4,257	49.0
Three Years	8,125	821	10.1	8,266	743	9.0	8,395	689	8.2	8,510	691	8.1	8,610	876	10.2
Four Years	8,051	710	8.8	8,205	726	8.8	8,347	654	7.8	8,476	576	6.8	8,589	784	9.1
Five Years	7,813	605	7.7	7,965	600	7.5	8,117	533	6.6	8,255	538	6.5	8,381	610	7.3
Total	**49,110**	**8,294**	**16.9**	**49,907**	**9,320**	**18.7**	**50,640**	**9,308**	**18.4**	**51,288**	**10,063**	**19.6**	**51,849**	**12,159**	**23.5**
Baltimore County															
Under One	11,749	1,293	11.0	11,894	1,381	11.6	12,018	1,443	12.0	12,123	1,295	10.7	12,208	1,444	11.8
One Year	11,791	5,918	50.2	11,956	6,000	50.2	12,102	6,495	53.7	12,225	6,763	55.3	12,329	6,838	55.5
Two Years	11,394	5,641	49.5	11,572	5,453	47.1	11,732	5,231	44.6	11,873	5,765	48.6	11,991	6,276	52.3
Three Years	11,390	1,409	12.4	11,588	1,343	11.6	11,768	1,232	10.5	11,929	1,252	10.5	12,068	1,434	11.9
Four Years	11,084	1,272	11.5	11,296	1,162	10.3	11,491	1,132	9.9	11,669	1,076	9.2	11,825	1,224	10.4
Five Years	11,000	1,016	9.2	11,214	962	8.6	11,428	877	7.7	11,624	928	8.0	11,801	913	7.7
Total	**68,408**	**16,549**	**24.2**	**69,520**	**16,301**	**23.4**	**70,539**	**16,410**	**23.3**	**71,443**	**17,079**	**23.9**	**72,222**	**18,129**	**25.1**
Baltimore City															
Under One	10,737	1,162	10.8	10,869	1,249	11.5	10,983	1,294	11.8	11,079	1,138	10.3	11,156	952	8.5
One Year	10,343	6,515	63.0	10,487	6,445	61.5	10,616	6,204	58.4	10,723	6,113	57.0	10,815	5,831	53.9
Two Years	9,868	5,415	54.9	10,022	5,277	52.7	10,161	5,181	51.0	10,283	5,059	49.2	10,385	5,433	52.3
Three Years	9,328	2,181	23.4	9,491	1,969	20.7	9,638	1,797	18.6	9,770	1,848	18.9	9,885	1,995	20.2
Four Years	8,921	1,934	21.7	9,091	1,806	19.9	9,249	1,696	18.3	9,391	1,712	18.2	9,517	1,778	18.7
Five Years	8,496	1,328	15.6	8,662	1,215	14.0	8,827	1,050	11.9	8,978	1,022	11.4	9,114	1,110	12.2
Total	**57,693**	**18,535**	**32.1**	**58,622**	**17,961**	**30.6**	**59,474**	**17,222**	**29.0**	**60,224**	**16,892**	**28.0**	**60,872**	**17,099**	**28.1**

Refer to page 8 for terms and definitions.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

	2013			2013			2015			2016			2017		
	Population of	Children Tested		Population of	Children Tested		Population of	Children Tested		Population of	Children Tested		Population of	Children Tested	
Age Group	Children	Number	Percent	Children	Number	Percent	Children	Number	Percent	Children	Number	Percent	Children	Number	Percent
							Calvert County								
Under One	1,150	92	8.0	1,164	116	10.0	1,177	78	6.6	1,187	60	5.1	1,196	53	4.4
One Year	1,154	316	27.4	1,170	306	26.2	1,185	332	28.0	1,197	414	34.6	1,207	430	35.6
Two Years	1,173	147	12.5	1,191	137	11.5	1,208	158	13.1	1,222	223	18.2	1,235	293	23.7
Three Years	1,223	33	2.7	1,244	27	2.2	1,264	25	2.0	1,281	38	3.0	1,297	52	4.0
Four Years	1,249	23	1.8	1,273	24	1.9	1,296	28	2.2	1,317	26	2.0	1,333	45	3.4
Five Years	1,338	24	1.8	1,364	26	1.9	1,390	27	1.9	1,414	26	1.8	1,436	36	2.5
Total	**7,287**	**635**	**8.7**	**7,406**	**636**	**8.6**	**7,520**	**648**	**8.6**	**7,618**	**787**	**10.3**	**7,704**	**909**	**11.8**
							Caroline County								
Under One	539	10	1.9	545	12	2.2	551	10	1.8	557	17	3.1	561	6	1.1
One Year	543	296	54.5	550	266	48.4	557	304	54.6	563	300	53.3	569	314	55.2
Two Years	543	258	47.5	552	242	43.8	560	259	46.3	567	283	49.9	572	293	51.2
Three Years	583	47	8.1	594	59	9.9	603	57	9.5	611	56	9.2	619	60	9.7
Four Years	552	44	8.0	563	51	9.1	573	33	5.8	583	50	8.6	591	46	7.8
Five Years	531	26	4.9	541	21	3.9	552	22	4.0	562	34	6.0	571	31	5.4
Total	**3,292**	**681**	**20.7**	**3,345**	**651**	**19.5**	**3,396**	**685**	**20.2**	**3,443**	**740**	**21.5**	**3,483**	**750**	**21.5**
							Carroll County								
Under One	1,964	140	7.1	1,989	141	7.1	2,010	192	9.6	2,028	156	7.7	2,041	195	9.6
One Year	2,085	563	27.0	2,114	544	25.7	2,140	642	30.0	2,163	807	37.3	2,181	1,131	51.9
Two Years	2,148	336	15.6	2,182	321	14.7	2,212	387	17.5	2,239	617	27.6	2,262	843	37.3
Three Years	2,220	101	4.5	2,259	107	4.7	2,294	80	3.5	2,326	114	4.9	2,354	147	6.2
Four Years	2,345	89	3.8	2,390	83	3.5	2,432	68	2.8	2,470	72	2.9	2,503	95	3.8
Five Years	2,516	93	3.7	2,564	64	2.5	2,614	84	3.2	2,659	54	2.0	2,700	106	3.9
Total	**13,279**	**1,322**	**10.0**	**13,498**	**1,260**	**9.3**	**13,702**	**1,453**	**10.6**	**13,885**	**1,820**	**13.1**	**14,041**	**2,517**	**17.9**
							Cecil County								
Under One	1,526	113	7.4	1,545	111	7.2	1,562	75	4.8	1,576	85	5.4	1,587	194	12.2
One Year	1,589	532	33.5	1,611	580	36.0	1,631	637	39.1	1,648	701	42.5	1,662	688	41.4
Two Years	1,534	329	21.4	1,558	335	21.5	1,580	317	20.1	1,600	364	22.8	1,616	414	25.6
Three Years	1,525	176	11.5	1,552	150	9.7	1,576	134	8.5	1,598	140	8.8	1,617	168	10.4
Four Years	1,493	201	13.5	1,522	173	11.4	1,548	188	12.1	1,572	182	11.6	1,594	191	12.0
Five Years	1,538	152	9.9	1,568	124	7.9	1,599	84	5.3	1,627	72	4.4	1,651	82	5.0
Total	**9,207**	**1,503**	**16.3**	**9,356**	**1,473**	**15.7**	**9,496**	**1,435**	**15.1**	**9,621**	**1,544**	**16.0**	**9,727**	**1,737**	**17.9**

Refer to page 8 for terms and definitions.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

Age Group	2013			2013			2015			2016			2017		
	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent
Charles County															
Under One	2,243	285	12.7	2,270	275	12.1	2,294	300	13.1	2,315	207	8.9	2,331	222	9.5
One Year	2,192	683	31.2	2,224	809	36.4	2,251	767	34.1	2,274	856	37.6	2,293	1,000	43.6
Two Years	2,353	699	29.7	2,390	800	33.5	2,424	797	32.9	2,453	907	37.0	2,477	928	37.5
Three Years	2,218	228	10.3	2,257	175	7.8	2,292	163	7.1	2,324	193	8.3	2,351	227	9.7
Four Years	2,255	158	7.0	2,298	181	7.9	2,339	133	5.7	2,375	141	5.9	2,407	137	5.7
Five Years	2,226	93	4.2	2,269	97	4.3	2,313	73	3.2	2,352	87	3.7	2,389	114	4.8
Total	**13,488**	**2,146**	**15.9**	**13,708**	**2,337**	**17.0**	**13,913**	**2,233**	**16.0**	**14,093**	**2,391**	**17.0**	**14,248**	**2,628**	**18.4**
Dorchester County															
Under One	509	12	2.4	515	10	1.9	521	4	0.8	526	6	1.1	529	7	1.3
One Year	488	289	59.3	495	274	55.4	501	257	51.3	506	255	50.4	511	280	54.8
Two Years	490	208	42.4	498	245	49.2	505	235	46.5	512	241	47.1	516	233	45.2
Three Years	474	70	14.8	482	60	12.4	490	83	16.9	497	62	12.5	503	72	14.3
Four Years	472	66	14.0	481	34	7.1	490	36	7.3	498	53	10.6	505	47	9.3
Five Years	413	31	7.5	421	19	4.5	430	15	3.5	438	18	4.1	445	16	3.6
Total	**2,847**	**676**	**23.8**	**2,892**	**642**	**22.2**	**2,937**	**630**	**21.5**	**2,977**	**635**	**21.3**	**3,009**	**655**	**21.8**
Frederick County															
Under One	3,413	127	3.7	3,455	113	3.3	3,492	176	5.0	3,522	115	3.3	3,547	164	4.6
One Year	3,423	1,374	40.1	3,471	1,370	39.5	3,514	1,819	51.8	3,550	2,130	60.0	3,580	2,217	61.9
Two Years	3,601	556	15.4	3,658	510	13.9	3,709	595	16.0	3,753	1,374	36.6	3,791	1,860	49.1
Three Years	3,602	292	8.1	3,665	315	8.6	3,722	296	8.0	3,773	350	9.3	3,817	352	9.2
Four Years	3,683	348	9.4	3,753	323	8.6	3,819	317	8.3	3,878	347	8.9	3,930	375	9.5
Five Years	3,624	276	7.6	3,695	218	5.9	3,765	204	5.4	3,830	258	6.7	3,889	269	6.9
Total	**21,348**	**2,973**	**13.9**	**21,697**	**2,849**	**13.1**	**22,021**	**3,407**	**15.5**	**22,306**	**4,574**	**20.5**	**22,554**	**5,237**	**23.2**
Garrett County															
Under One	367	12	3.3	372	6	1.6	376	13	3.5	380	6	1.6	383	4	1.0
One Year	341	142	41.6	346	166	48.0	350	160	45.7	354	162	45.8	358	164	45.8
Two Years	382	130	34.0	387	148	38.2	394	127	32.2	399	145	36.3	403	156	38.7
Three Years	373	51	13.7	380	60	15.8	386	46	11.9	392	44	11.2	396	42	10.6
Four Years	388	31	8.0	396	49	12.4	403	33	8.2	409	24	5.9	415	25	6.0
Five Years	413	35	8.5	421	35	8.3	430	15	3.5	438	12	2.7	444	15	3.4
Total	**2,265**	**401**	**17.7**	**2,302**	**464**	**20.2**	**2,339**	**394**	**16.8**	**2,372**	**393**	**16.6**	**2,399**	**406**	**16.9**

Refer to page 8 for terms and definitions.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

Age Group	2013			2013			2015			2016			2017		
	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent
Harford County															
Under One	3,472	288	8.3	3,515	272	7.7	3,552	210	5.9	3,583	279	7.8	3,609	554	15.4
One Year	3,555	969	27.3	3,605	1,051	29.2	3,649	1,222	33.5	3,686	1,560	42.3	3,718	1,772	47.7
Two Years	3,550	758	21.4	3,605	751	20.8	3,655	821	22.5	3,700	1,116	30.2	3,737	1,570	42.0
Three Years	3,649	231	6.3	3,712	265	7.1	3,770	269	7.1	3,823	284	7.4	3,867	350	9.1
Four Years	3,647	297	8.1	3,716	283	7.6	3,781	265	7.0	3,840	293	7.6	3,891	335	8.6
Five Years	3,600	311	8.6	3,671	231	6.3	3,741	214	5.7	3,806	255	6.7	3,863	250	6.5
Total	**21,474**	**2,854**	**13.3**	**21,824**	**2,853**	**13.1**	**22,148**	**3,001**	**13.5**	**22,438**	**3,787**	**16.9**	**22,685**	**4,831**	**21.3**
Howard County															
Under One	4,012	211	5.3	4,062	181	4.5	4,104	230	5.6	4,141	226	5.5	4,169	375	9.0
One Year	4,024	990	24.6	4,081	937	23.0	4,131	1,087	26.3	4,173	1,793	43.0	4,209	2,338	55.5
Two Years	4,227	587	13.9	4,293	595	13.9	4,353	636	14.6	4,405	1,023	23.2	4,449	1,890	42.5
Three Years	4,196	285	6.8	4,269	241	5.6	4,335	239	5.5	4,395	321	7.3	4,447	419	9.4
Four Years	4,251	230	5.4	4,332	241	5.6	4,407	211	4.8	4,476	292	6.5	4,536	367	8.1
Five Years	4,434	184	4.1	4,520	192	4.2	4,607	191	4.1	4,686	189	4.0	4,757	289	6.1
Total	**25,145**	**2,487**	**9.9**	**25,557**	**2,387**	**9.3**	**25,937**	**2,594**	**10.0**	**26,276**	**3,844**	**14.6**	**26,567**	**5,678**	**21.4**
Kent County															
Under One	246	14	5.7	249	6	2.4	252	13	5.2	255	5	2.0	256	8	3.1
One Year	246	119	48.4	249	109	43.8	253	105	41.5	255	101	39.6	258	93	36.0
Two Years	226	72	31.9	230	86	37.4	233	85	36.5	236	68	28.8	239	69	28.9
Three Years	239	19	7.9	243	25	10.3	247	25	10.1	251	23	9.2	254	14	5.5
Four Years	232	27	11.6	236	27	11.4	241	19	7.9	245	15	6.1	249	15	6.0
Five Years	242	11	4.5	247	4	1.6	252	5	2.0	257	8	3.1	260	4	1.5
Total	**1,431**	**262**	**18.3**	**1,454**	**257**	**17.7**	**1,478**	**252**	**17.1**	**1,499**	**220**	**14.7**	**1,516**	**203**	**13.4**
Montgomery County															
Under One	15,347	3,484	22.7	15,536	3,398	21.9	15,698	3,511	22.4	15,835	3,139	19.8	15,946	3,592	22.5
One Year	15,361	5,317	34.6	15,575	5,480	35.2	15,765	6,116	38.8	15,925	7,271	45.7	16,061	8,255	51.4
Two Years	15,308	5,334	34.8	15,548	4,800	30.9	15,763	5,092	32.3	15,952	6,495	40.7	16,111	8,037	49.9
Three Years	14,905	1,849	12.4	15,164	1,671	11.0	15,399	1,611	10.5	15,610	1,706	10.9	15,793	1,801	11.4
Four Years	15,155	2,577	17.0	15,445	2,367	15.3	15,712	2,154	13.7	15,954	2,205	13.8	16,168	2,286	14.1
Five Years	14,698	1,747	11.9	14,984	1,592	10.6	15,269	1,505	9.9	15,530	1,576	10.1	15,767	1,623	10.3
Total	**90,774**	**20,308**	**22.4**	**92,252**	**19,308**	**20.9**	**93,606**	**19,989**	**21.4**	**94,806**	**22,392**	**23.6**	**95,846**	**25,594**	**26.7**

Refer to page 8 for terms and definitions.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

Age Group	2013			2013			2015			2016			2017		
	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent
Prince George's County															
Under One	14,792	2,034	13.8	14,974	2,394	16.0	15,130	2,500	16.5	15,262	1,961	12.8	15,369	2,187	14.2
One Year	14,283	5,833	40.8	14,482	5,947	41.1	14,659	6,234	42.5	14,808	6,669	45.0	14,935	7,115	47.6
Two Years	13,908	5,051	36.3	14,126	5,046	35.7	14,321	5,228	36.5	14,493	5,871	40.5	14,638	6,388	43.6
Three Years	13,810	2,545	18.4	14,050	2,430	17.3	14,269	2,275	15.9	14,464	2,314	16.0	14,634	2,351	16.1
Four Years	13,162	2,817	21.4	13,414	2,616	19.5	13,646	2,649	19.4	13,857	2,650	19.1	14,042	2,672	19.0
Five Years	12,744	2,158	16.9	12,993	2,127	16.4	13,240	1,923	14.5	13,467	1,959	14.5	13,671	2,041	14.9
Total	**82,701**	**20,438**	**24.7**	**84,039**	**20,560**	**24.5**	**85,265**	**20,809**	**24.4**	**86,351**	**21,424**	**24.8**	**87,289**	**22,754**	**26.1**
Queen Anne's County															
Under One	649	19	2.9	657	13	2.0	665	25	3.8	671	14	2.1	675	15	2.2
One Year	633	204	32.2	642	256	39.9	650	260	40.0	658	327	49.7	663	313	47.2
Two Years	632	110	17.4	641	214	33.4	651	194	29.8	659	248	37.6	666	290	43.5
Three Years	652	42	6.4	663	72	10.9	674	49	7.3	684	30	4.4	692	52	7.5
Four Years	669	35	5.2	682	51	7.5	694	64	9.2	705	32	4.5	715	42	5.9
Five Years	701	34	4.8	715	28	3.9	729	34	4.7	742	17	2.3	753	24	3.2
Total	**3,936**	**444**	**11.3**	**4,000**	**634**	**15.9**	**4,063**	**626**	**15.4**	**4,119**	**668**	**16.2**	**4,164**	**736**	**17.7**
Saint Mary's County															
Under One	1,808	216	11.9	1,830	156	8.5	1,850	213	11.5	1,866	99	5.3	1,880	86	4.6
One Year	1,788	567	31.7	1,813	581	32.0	1,836	572	31.2	1,854	647	34.9	1,870	796	42.6
Two Years	1,775	503	28.3	1,803	417	23.1	1,828	359	19.6	1,850	401	21.7	1,869	455	24.3
Three Years	1,866	105	5.6	1,899	98	5.2	1,929	70	3.6	1,956	80	4.1	1,978	83	4.2
Four Years	1,808	96	5.3	1,842	84	4.6	1,875	75	4.0	1,904	72	3.8	1,930	73	3.8
Five Years	1,760	46	2.6	1,795	48	2.7	1,829	54	3.0	1,861	53	2.8	1,889	37	2.0
Total	**10,806**	**1,533**	**14.2**	**10,982**	**1,384**	**12.6**	**11,147**	**1,343**	**12.0**	**11,291**	**1,352**	**12.0**	**11,416**	**1,530**	**13.4**
Somerset County															
Under One	314	16	5.1	318	10	3.1	322	10	3.1	325	10	3.1	327	6	1.8
One Year	310	189	61.0	315	215	68.3	319	195	61.1	323	196	60.7	325	198	60.9
Two Years	325	186	57.2	330	164	49.7	335	196	58.5	340	176	51.8	344	177	51.5
Three Years	280	70	25.0	284	61	21.5	289	51	17.6	294	37	12.6	297	38	12.8
Four Years	296	58	19.6	302	51	16.9	307	50	16.3	313	24	7.7	317	21	6.6
Five Years	280	45	16.1	285	25	8.8	291	12	4.1	297	6	2.0	301	4	1.3
Total	**1,806**	**564**	**31.2**	**1,834**	**526**	**28.7**	**1,863**	**514**	**27.6**	**1,892**	**449**	**23.7**	**1,911**	**444**	**23.2**

Refer to page 8 for terms and definitions.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

Age Group	2013			2013			2015			2016			2017		
	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent	Population of Children	Children Tested Number	Children Tested Percent
Talbot County															
Under One	411	15	3.6	416	10	2.4	421	8	1.9	425	2	0.5	428	4	0.9
One Year	480	298	62.1	487	264	54.2	493	292	59.2	499	287	57.5	503	285	56.7
Two Years	474	249	52.5	481	228	47.4	488	241	49.4	494	264	53.4	500	262	52.4
Three Years	420	50	11.9	428	36	8.4	434	43	9.9	441	45	10.2	446	40	9.0
Four Years	436	38	8.7	444	23	5.2	452	32	7.1	460	18	3.9	466	37	7.9
Five Years	474	17	3.6	483	23	4.8	493	16	3.2	502	18	3.6	509	19	3.7
Total	**2,695**	**667**	**24.7**	**2,739**	**584**	**21.3**	**2,781**	**632**	**22.7**	**2,821**	**634**	**22.5**	**2,852**	**647**	**22.7**
Washington County															
Under One	2,129	66	3.1	2,155	93	4.3	2,178	77	3.5	2,197	54	2.5	2,213	36	1.6
One Year	2,115	995	47.0	2,145	922	43.0	2,172	963	44.3	2,194	1,056	48.1	2,212	1,019	46.1
Two Years	2,193	757	34.5	2,228	761	34.2	2,259	807	35.7	2,286	876	38.3	2,309	941	40.8
Three Years	2,232	310	13.9	2,271	293	12.9	2,307	279	12.1	2,339	302	12.9	2,366	278	11.7
Four Years	2,071	332	16.0	2,111	375	17.8	2,148	293	13.6	2,181	295	13.5	2,210	313	14.2
Five Years	2,174	254	11.7	2,216	255	11.5	2,259	248	11.0	2,298	239	10.4	2,333	228	9.8
Total	**12,916**	**2,714**	**21.0**	**13,126**	**2,699**	**20.6**	**13,323**	**2,667**	**20.0**	**13,495**	**2,822**	**20.9**	**13,643**	**2,815**	**20.6**
Wicomico County															
Under One	1,510	42	2.8	1,529	41	2.7	1,545	42	2.7	1,559	22	1.4	1,571	47	3.0
One Year	1,520	809	53.2	1,541	781	50.7	1,561	767	49.1	1,577	844	53.5	1,591	943	59.3
Two Years	1,464	744	50.8	1,487	717	48.2	1,508	713	47.3	1,526	781	51.2	1,542	852	55.3
Three Years	1,520	225	14.8	1,546	201	13.0	1,571	212	13.5	1,593	214	13.4	1,612	228	14.1
Four Years	1,321	147	11.1	1,346	125	9.3	1,370	139	10.1	1,391	131	9.4	1,410	140	9.9
Five Years	1,398	81	5.8	1,425	72	5.1	1,452	72	5.0	1,478	83	5.6	1,500	75	5.0
Total	**8,733**	**2,048**	**23.5**	**8,874**	**1,937**	**21.8**	**9,007**	**1,945**	**21.6**	**9,124**	**2,075**	**22.7**	**9,226**	**2,285**	**24.8**
Worcester County															
Under One	559	13	2.3	565	14	2.5	572	9	1.6	578	20	3.5	582	23	4.0
One Year	565	300	53.1	573	280	48.9	580	297	51.2	586	363	61.9	592	392	66.2
Two Years	552	328	59.4	560	285	50.9	568	268	47.2	575	321	55.8	581	344	59.2
Three Years	546	86	15.8	555	92	16.6	565	88	15.6	572	64	11.2	580	77	13.3
Four Years	554	77	13.9	564	53	9.4	574	53	9.2	584	46	7.9	591	55	9.3
Five Years	523	26	5.0	534	22	4.1	544	20	3.7	553	20	3.6	561	33	5.9
Total	**3,297**	**830**	**25.2**	**3,351**	**746**	**22.3**	**3,403**	**735**	**21.6**	**3,448**	**834**	**24.2**	**3,487**	**924**	**26.5**

Refer to page 8 for terms and definitions.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Lead Poisoning Prevention Program: Childhood Lead Registry
Age-specific blood lead testing by jurisdiction: Five year data: 2013-2017

Age Group	2013 Population of Children	2013 Children Tested Number	2013 Children Tested Percent	2013 Population of Children	2013 Children Tested Number	2013 Children Tested Percent	2015 Population of Children	2015 Children Tested Number	2015 Children Tested Percent	2016 Population of Children	2016 Children Tested Number	2016 Children Tested Percent	2017 Population of Children	2017 Children Tested Number	2017 Children Tested Percent
Statewide															
Under One	88,763	10,146	11.4	89,854	10,604	11.8	90,803	11,037	12.2	91,604	9,363	10.2	92,245	10,699	11.6
One Year	88,034	37,133	42.2	89,267	38,092	42.7	90,364	40,289	44.6	91,287	44,618	48.9	92,070	48,045	52.2
Two Years	87,210	31,224	35.8	88,574	30,789	34.8	89,807	31,364	34.9	90,890	36,507	40.2	91,801	42,768	46.6
Three Years	86,194	11,284	13.1	87,693	10,551	12.0	89,062	9,856	11.1	90,290	10,248	11.4	91,350	11,219	12.3
Four Years	84,960	11,669	13.7	86,582	10,965	12.7	88,090	10,369	11.8	89,458	10,373	11.6	90,656	11,143	12.3
Five Years	83,704	8,626	10.3	85,334	8,030	9.4	86,968	7,302	8.4	88,465	7,510	8.5	89,809	7,959	8.9
Total	**518,865**	**110,082**	**21.2**	**527,304**	**109,031**	**20.7**	**535,094**	**110,217**	**20.6**	**541,994**	**118,619**	**21.9**	**547,931**	**131,833**	**24.1**

Terms and definitions:

1. Population data was adapted from Maryland census population 2010, provided by the Maryland Data Center, Maryland Department of Planning, www.planning.maryland.gov/msdc.
2. Number of children tested is based in the order of the highest venous, highest unknown or the highest capillary blood lead test that the Childhood Lead Registry (CLR) received from laboratories for a given child for a given calendar year.
3. County assignment is based on child's address census tract (1st choice) or child's address zip code (2nd choice). Reports with incomplete or no address were assumed to be from Maryland children with address (and county) unknown. These records are not included in this supplement. As such, counties total may not equal the total for the state.
4. For detail information on blood lead distribution by age refer to the supplementary data tables1-4 of the CLR Annual Reports for the respective calendar year.

EPA United States Environmental Protection Agency

News Releases from Region 03

EPA raises awareness of lead paint rules in Philadelphia

10/25/2018

Contact Information:
EPA Region 3 Press Office: (R3press@epa.gov)

PHILADELPHIA (October 25, 2018) -- The U.S. Environmental Protection Agency (EPA) is working with local partners to raise awareness of EPA's lead-based paint rules in Philadelphia neighborhoods.

"By educating the public about the dangers of lead paint and increasing awareness of lead paint rules, we can help reduce lead poisoning in children," said EPA's Mid-Atlantic Regional Administrator Cosmo Servidio. **"This initiative is a focused effort with our local counterparts to reduce lead exposure in Philadelphia, where there is a large amount of older housing stock with lead paint that has not been removed."**

The most common source of lead exposure is through deteriorating lead-based paint in residences and commercial buildings built before 1978. EPA, along with partners from other federal agencies, the city of Philadelphia, and independent non-profit organizations are targeting communities where pre-1978 housing stock is prevalent.

Outreach efforts include in-person meetings, distributing technical assistance information, visits to paint/hardware stores, awareness training for city inspectors and providing information to contractors/renovators and property management firms. Information is also provided to daycare centers, childcare and healthcare focused organizations.

EPA enforces and raises awareness of several rules. The Renovation, Repair and Painting Rule (RRP) applies when a renovation or repair disturbs six square feet of interior (about the size of a standard poster) or 20 square feet (about the size of a standard door) of exterior painted surfaces.

The RRP rule requires that those working on pre-1978 housing be trained by an EPA-accredited training provider, be employed by a certified firm, use the required work practices to control exposure to lead/lead dust, and provide information on the rule to owner and tenants.

The Lead-based Paint Disclosure Rule requires owners of residential rental properties and sellers of residential property built before 1978 to disclose known information on lead-based paint and lead-based paint hazards before a lease or sale becomes enforceable. Sales contracts and leases must include a disclosure form about lead-based paint. Buyers have up to 10 days to check for lead hazards. Further, landlords and sellers must also provide the EPA publication "Protect Your Family from Lead in Your Home."

To find Certified “Lead-Safe” providers, go to www.epa.gov/lead or call 1-800-424-LEAD. The RRP rule does not apply to individuals doing work on their personal residences.

For more information on becoming a Certified “Lead-Safe” firm or renovator, or finding a certified firm for your renovation or repair project, go to: www.epa.gov/lead or call the National Lead Information Center at 1-800-424-LEAD (5323).

Earlier this week, EPA released a report called “Protecting Children from Lead Exposures” to highlight some of the ongoing programs being worked on across the various program and regional offices. The Agency continues to aggressively address lead issues across America, working with communities and partners to further identify and eliminate lead exposure, especially for children who are most vulnerable to lead poisoning.

LAST UPDATED ON OCTOBER 25, 2018

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Lead Poisoning Prevention Program

Childhood Lead Registry

Report to Lead Commission: Annual Report 2017

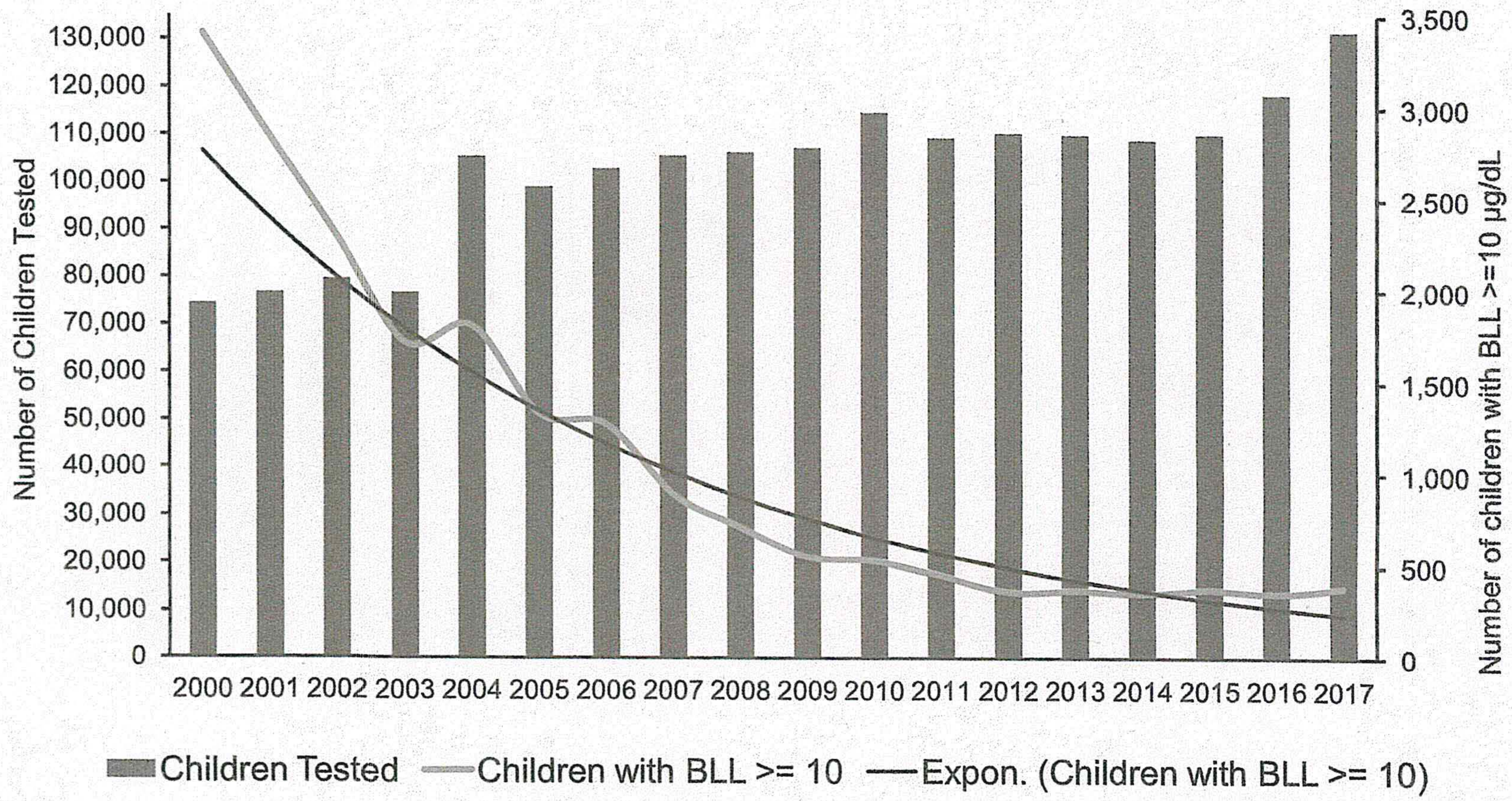
November 1, 2018

Calendar Year 2017 Statistical Report

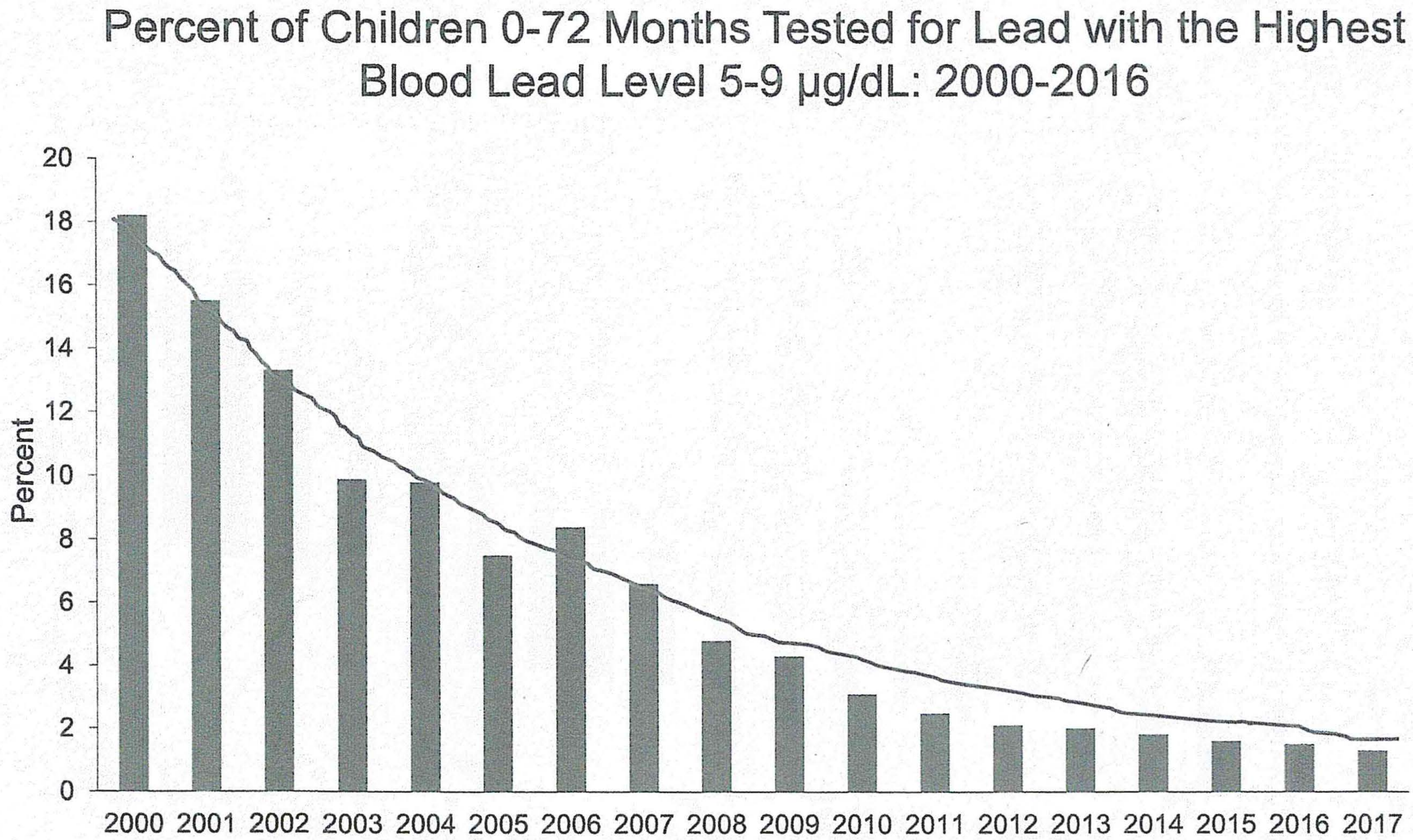
Item	Number	Percent (%)[2]
All Children		
Number of tests	151,206	
Number of children	143,200	
Children 0-72 Months		
Number of tests	139,435	
Number of children	131,832	100.0
Age		
Under One	10,698	8.1
One Year	48,045	36.4
Two Years	42,768	32.4
Three Years	11,219	8.5
Four Years	11,143	8.5
Five Years	7,959	6.0
Sex		
Female	63,841	48.4
Male	66,506	50.5
Undetermined	1,485	1.1
Highest Blood Lead Level (μg/dL)		
≤4	129,783	98.4
5-9	1,661	1.3
10-14	257	0.2
15-19	57	0.0
≥20	74	0.0
Mean BLL (Geometric mean)	1.666	
Blood Specimen		
Capillary	52,927	40.1
Venous	77,253	58.6
Undetermined[3]	1,652	1.3

State of the State Childhood Lead Poisoning

Number of Children 0-72 Months Tested for Lead and the Number Reported to Have Blood Lead Level ≥10 μg/dL: 2000-2017

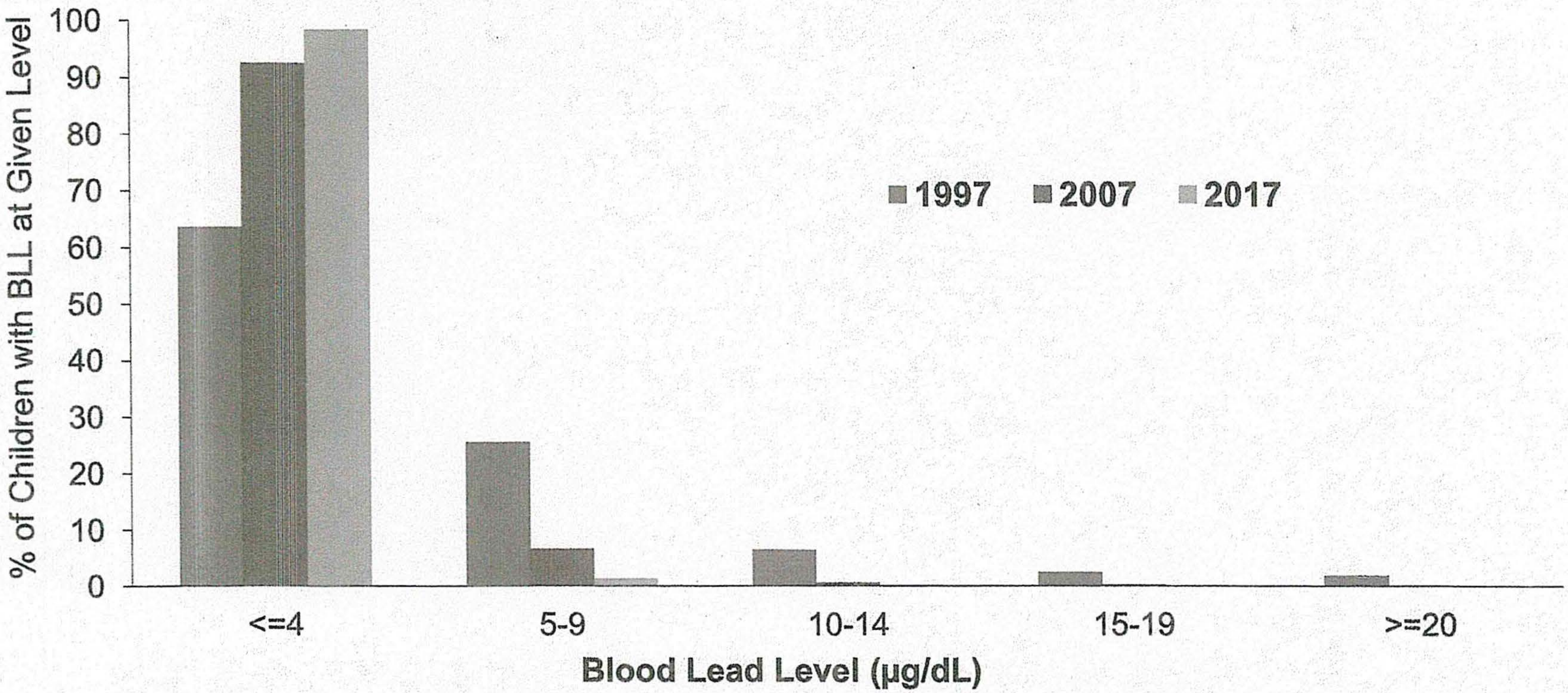


State of the State Childhood Lead Poisoning



State of the State Childhood Lead Poisoning

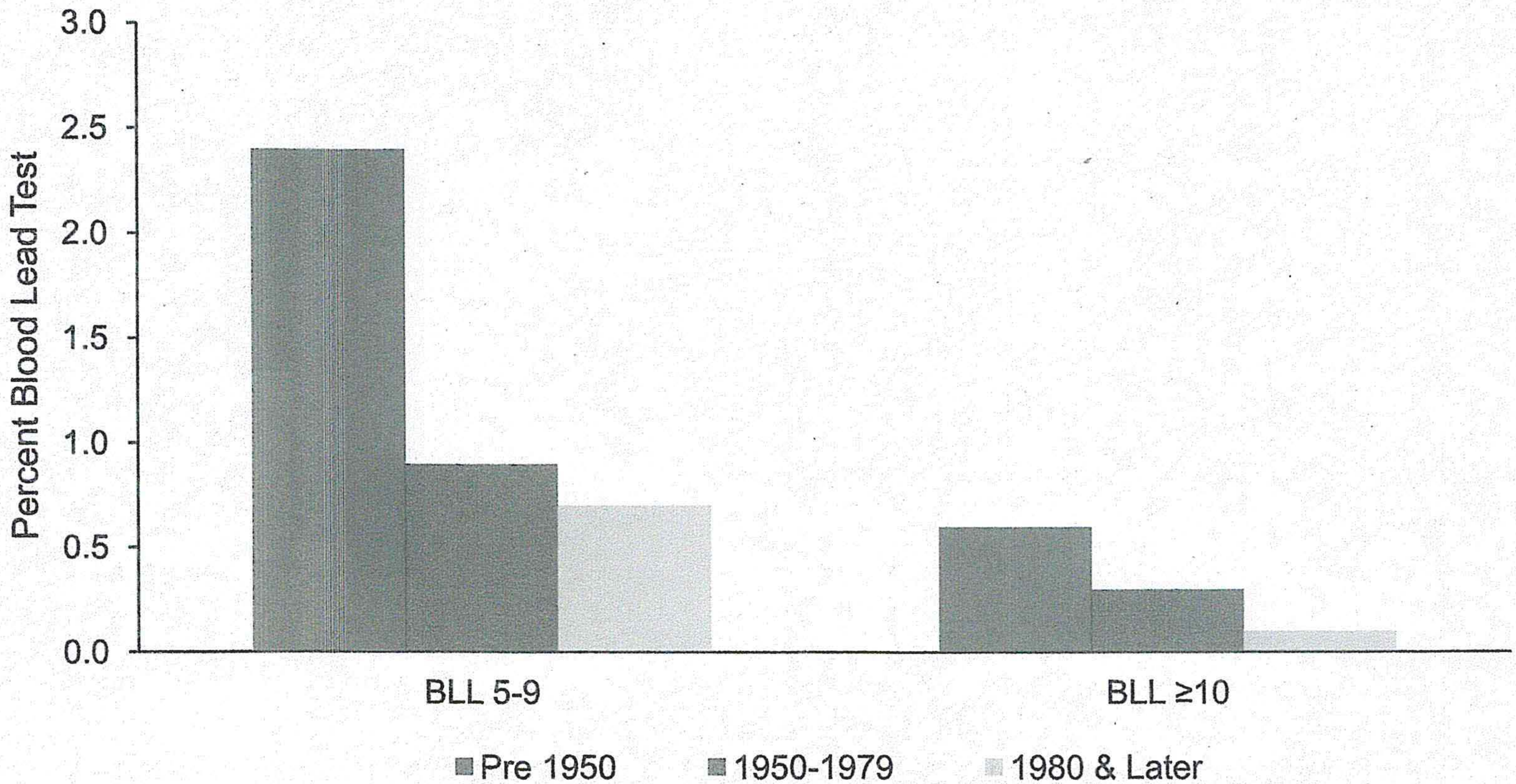
Blood Lead Distribution of Children 0-72 Months Tested for Lead in 1997, 2007, and 2017



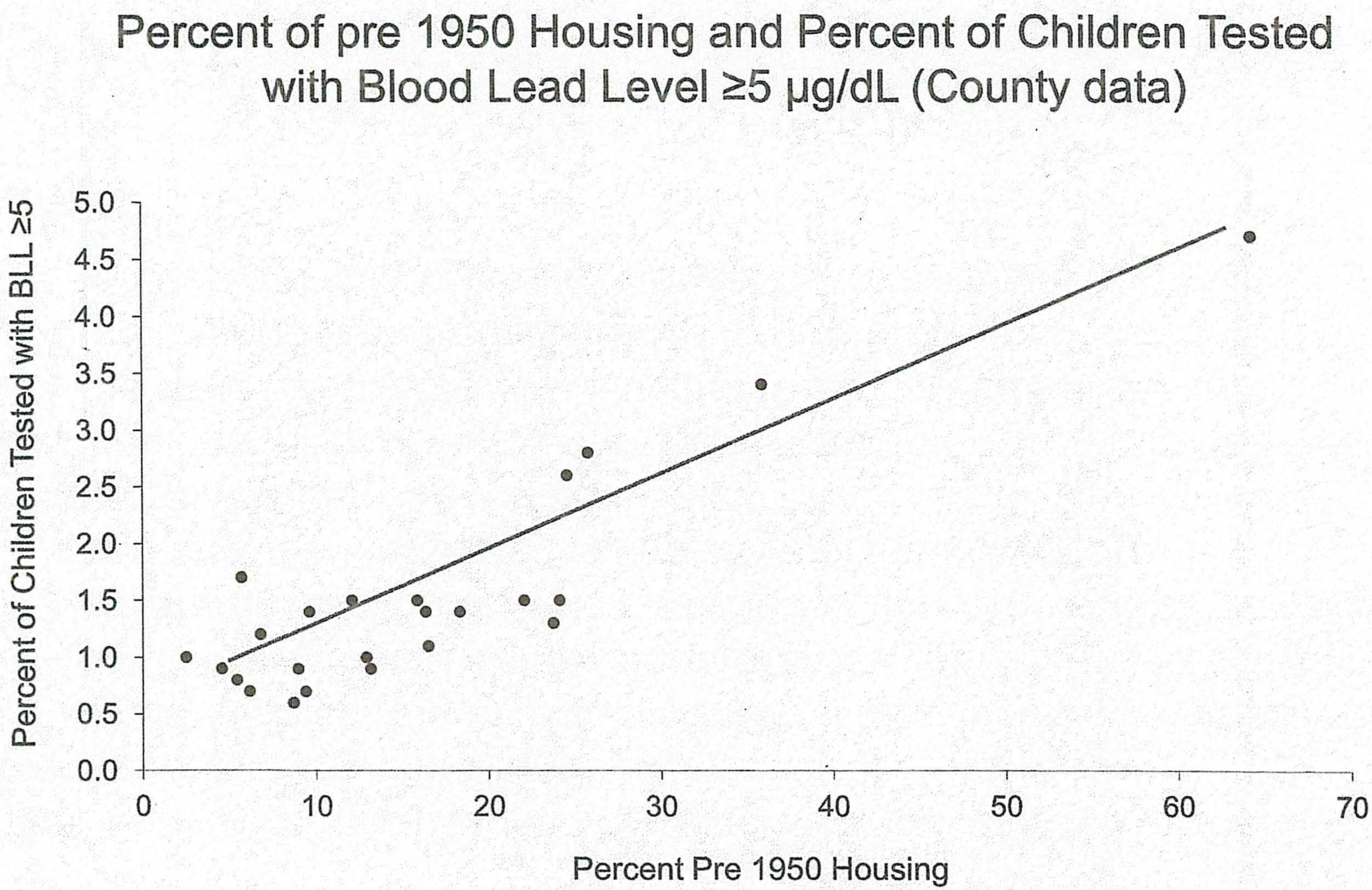
State of the State Childhood Lead Poisoning

The main source of childhood lead exposure is still lead based paint in older houses

Percent of Children 0-72 Months Tested for Lead and Had Blood Lead Level 5-9 or ≥10 by the Year of Construction of the House

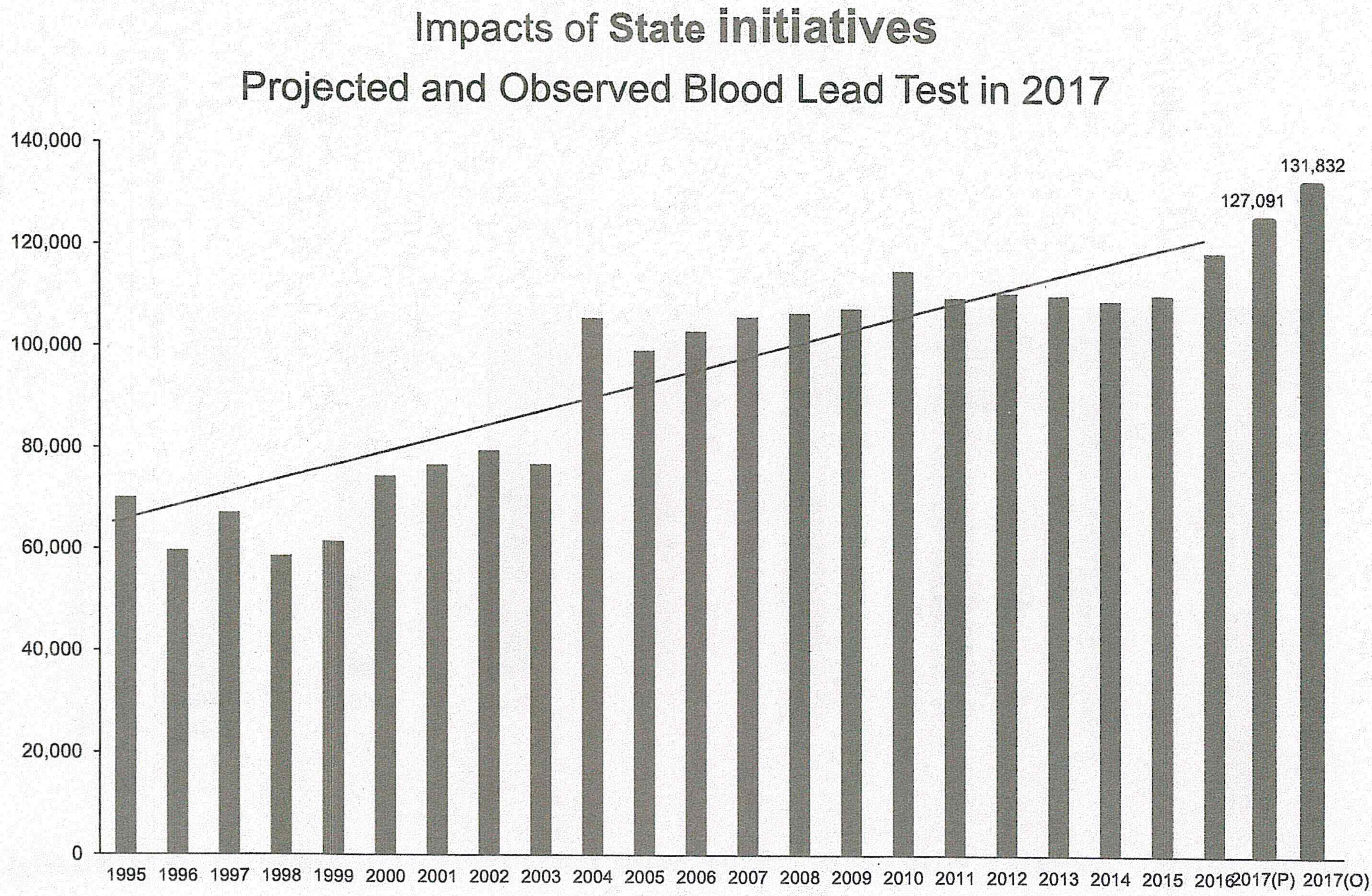


The main source of childhood lead exposure is still lead based paint in older houses



State initiatives on blood lead testing

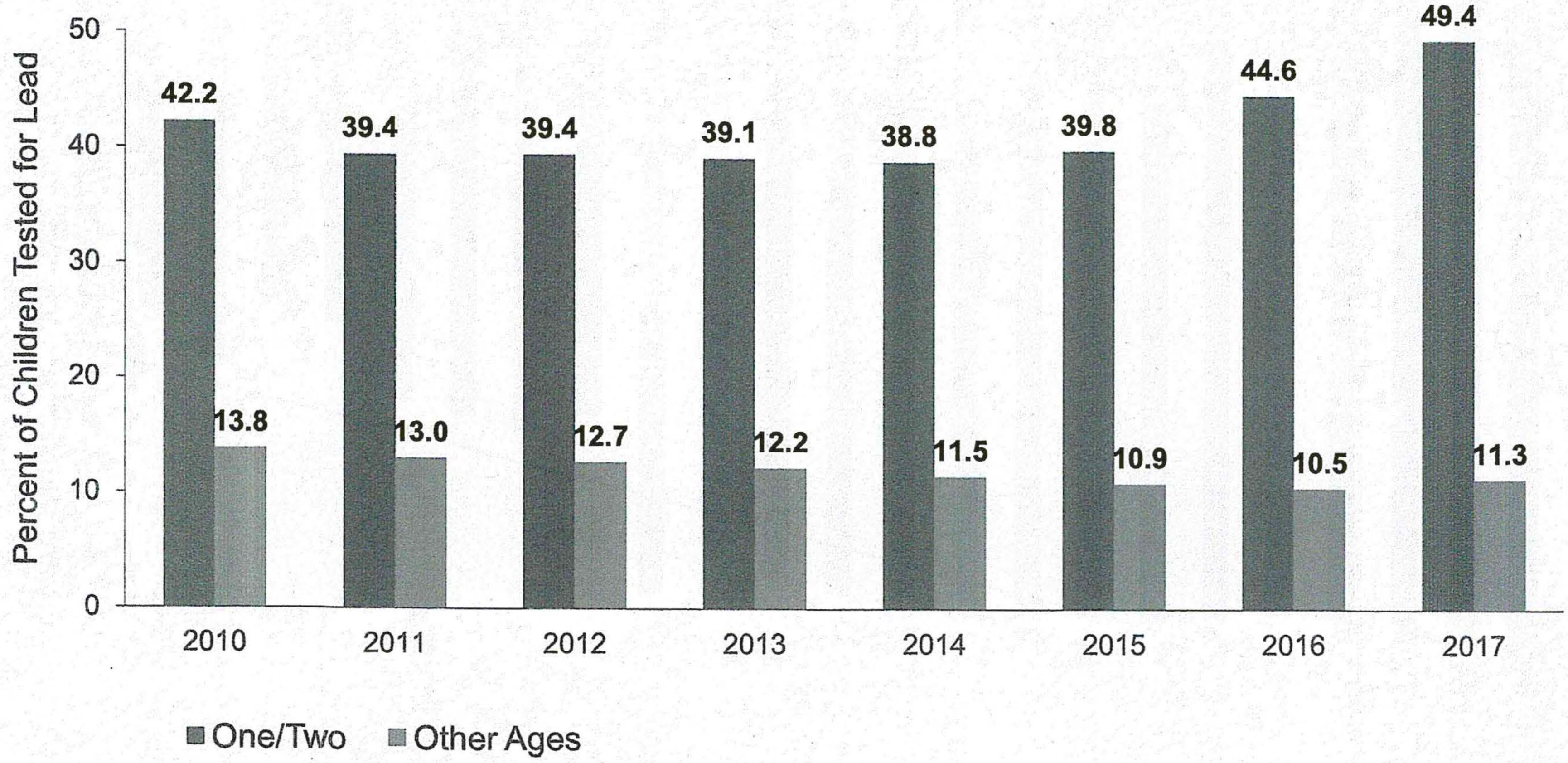
- The "Maryland Lead Testing Targeting Strategy" of 2015 replaced the earlier strategy of targeted areas of 2004.
  - Under new strategy the whole state of Maryland declared as "At risk" area with requirement that for three years (2016-2018) all children within the state to be tested at one and two years of age and anytime that there is suspicious of lead exposure.
- Further, in report to General Assembly in 2014, the "Task Force on Point of Care (POC) Testing for Lead Poisoning" recommended that:
  1) the state to encourage the use of POC for lead testing, and
  2) the Laboratories Administration to promote the use of POC tests for lead by making it easier for providers to implement POC testing.


Impacts of State initiatives
Projected and Observed Blood Lead Test in 2017
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
127,091
131,832
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017(P) 2017(O)

Impacts of State initiatives

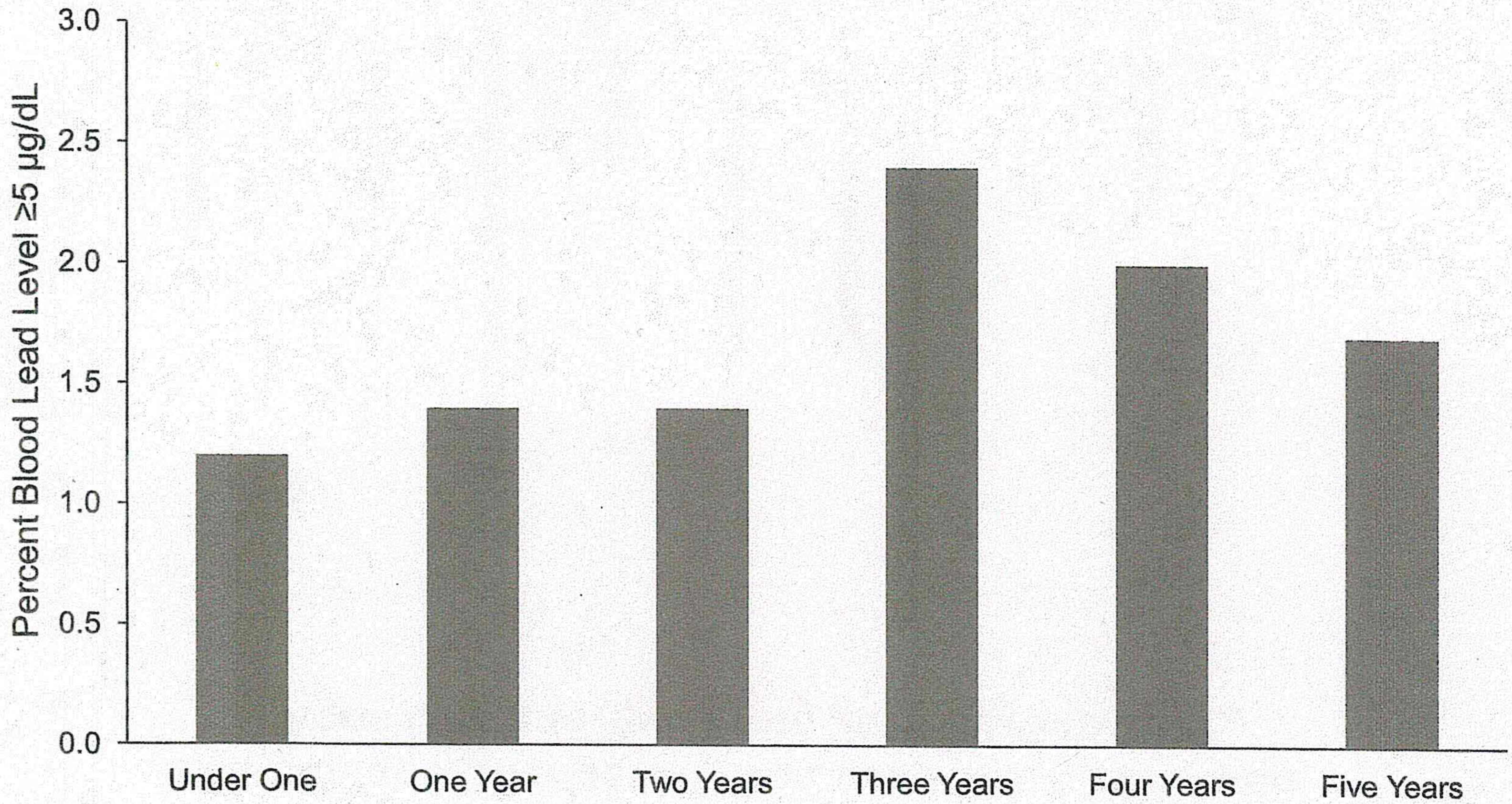
Increase was mostly among children ages 1 and 2

Percent of Children Tested for Lead, Ages One and Two vs. Other Ages



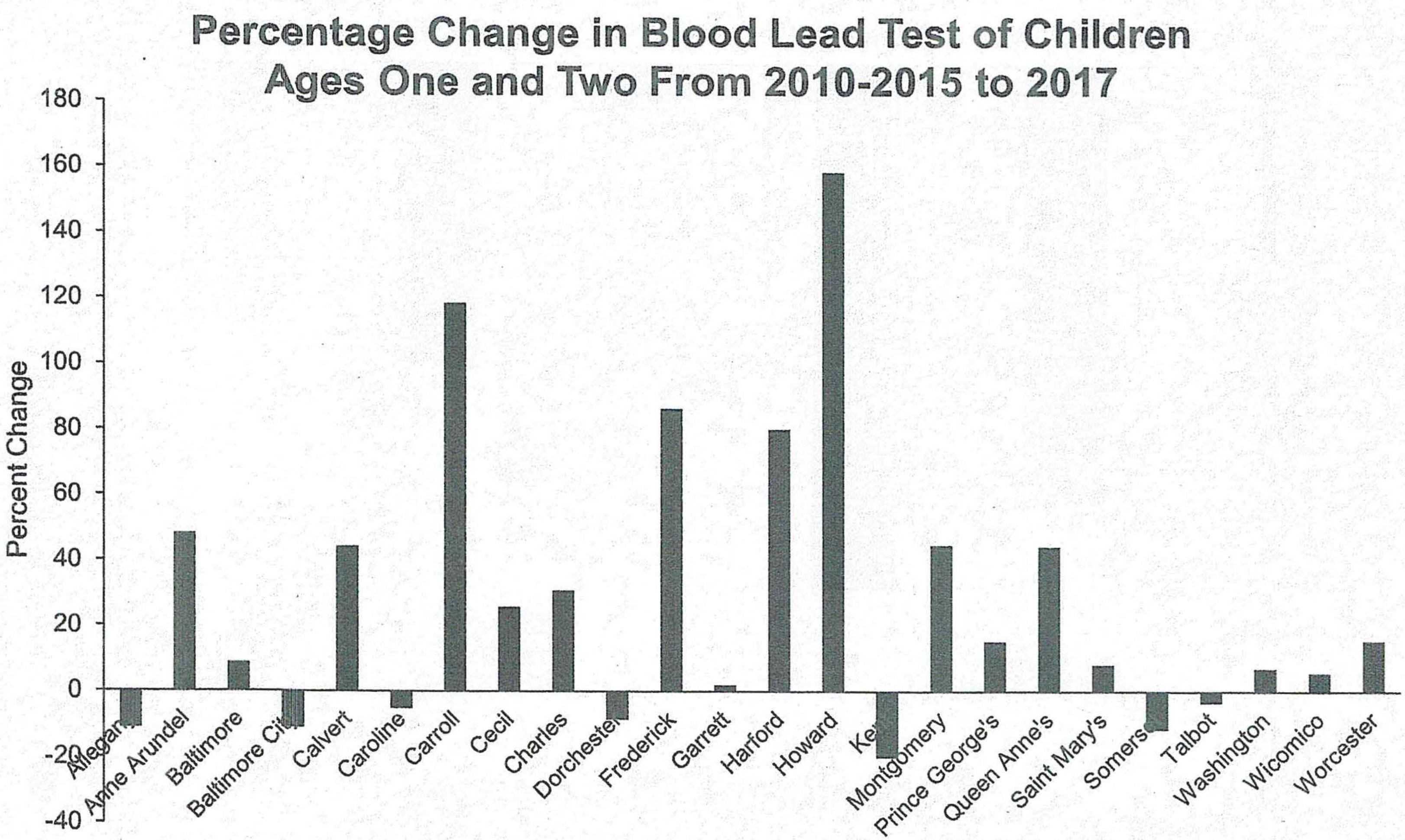
Impacts of State initiatives

Percent of children Tested for Lead with Blood Lead Level ≥5 µg/dL by Age



Impacts of State initiatives

Compared to pre "Universal Screening" years (2010-2015), most Jurisdictions had an increase in childhood blood testing.



Blood Lead Testing of Children One and Two Years Old by Jurisdiction in 2017

	One Year Old			Two Years Old			One and Two Years Old Total			All Other Ages		
		Children Tested			Children Tested			Children Tested			Children Tested	
County	Population	No.	%	Population	No.	%	Population	No.	%	Population	No.	%
Allegany	839	512	61.0	877	502	57.2	1,716	1,014	59.1	3,505	136	3.9
Anne Arundel	8,789	5,114	58.2	8,691	4,257	49.0	17,480	9,371	53.6	34,369	2,788	8.1
Baltimore	12,329	6,838	55.5	11,991	6,276	52.3	24,320	13,114	53.9	47,902	5,015	10.5
Baltimore City	10,815	5,831	53.9	10,385	5,433	52.3	21,200	11,264	53.1	39,672	5,835	14.7
Calvert	1,207	430	35.6	1,235	293	23.7	2,442	723	29.6	5,262	186	3.5
Caroline	569	314	55.2	572	293	51.2	1,141	607	53.2	2,342	143	6.1
Carroll	2,181	1,131	51.9	2,262	843	37.3	4,443	1,974	44.4	9,598	543	5.7
Cecil	1,662	688	41.4	1,616	414	25.6	3,278	1,102	33.6	6,449	635	9.8
Charles	2,293	1,000	43.6	2,477	928	37.5	4,770	1,928	40.4	9,478	700	7.4
Dorchester	511	280	54.8	516	233	45.2	1,027	513	50.0	1,982	142	7.2
Frederick	3,580	2,217	61.9	3,791	1,860	49.1	7,371	4,077	55.3	15,183	1,160	7.6
Garrett	358	164	45.8	403	156	38.7	761	320	42.0	1,638	86	5.3
Harford	3,718	1,772	47.7	3,737	1,570	42.0	7,455	3,342	44.8	15,230	1,489	9.8
Howard	4,209	2,338	55.5	4,449	1,890	42.5	8,658	4,228	48.8	17,909	1,450	8.1
Kent	258	93	36.0	239	69	28.9	497	162	32.6	1,019	41	4.0
Montgomery	16,061	8,255	51.4	16,111	8,037	49.9	32,172	16,292	50.6	63,674	9,302	14.6
Prince George's	14,935	7,115	47.6	14,638	6,388	43.6	29,573	13,503	45.7	57,716	9,251	16.0
Queen Anne's	663	313	47.2	666	290	43.5	1,329	603	45.4	2,835	133	4.7
Saint Mary's	1,870	796	42.6	1,869	455	24.3	3,739	1,251	33.5	7,677	279	3.6
Somerset	325	198	60.9	344	177	51.5	669	375	56.1	1,242	69	5.6
Talbot	503	285	56.7	500	262	52.4	1,003	547	54.5	1,849	100	5.4
Washington	2,212	1,019	46.1	2,309	941	40.8	4,521	1,960	43.4	9,122	855	9.4
Wicomico	1,591	943	59.3	1,542	852	55.3	3,133	1,795	57.3	6,093	490	8.0
Worcester	592	392	66.2	581	344	59.2	1,173	736	62.7	2,314	188	8.1
Statewide	92,070	48,045	52.2	91,801	42,768	46.6	183,871	90,813	49.4	364,060	41,020	11.3

Impacts of state initiatives
Blood Lead Testing (Providers' Practice)

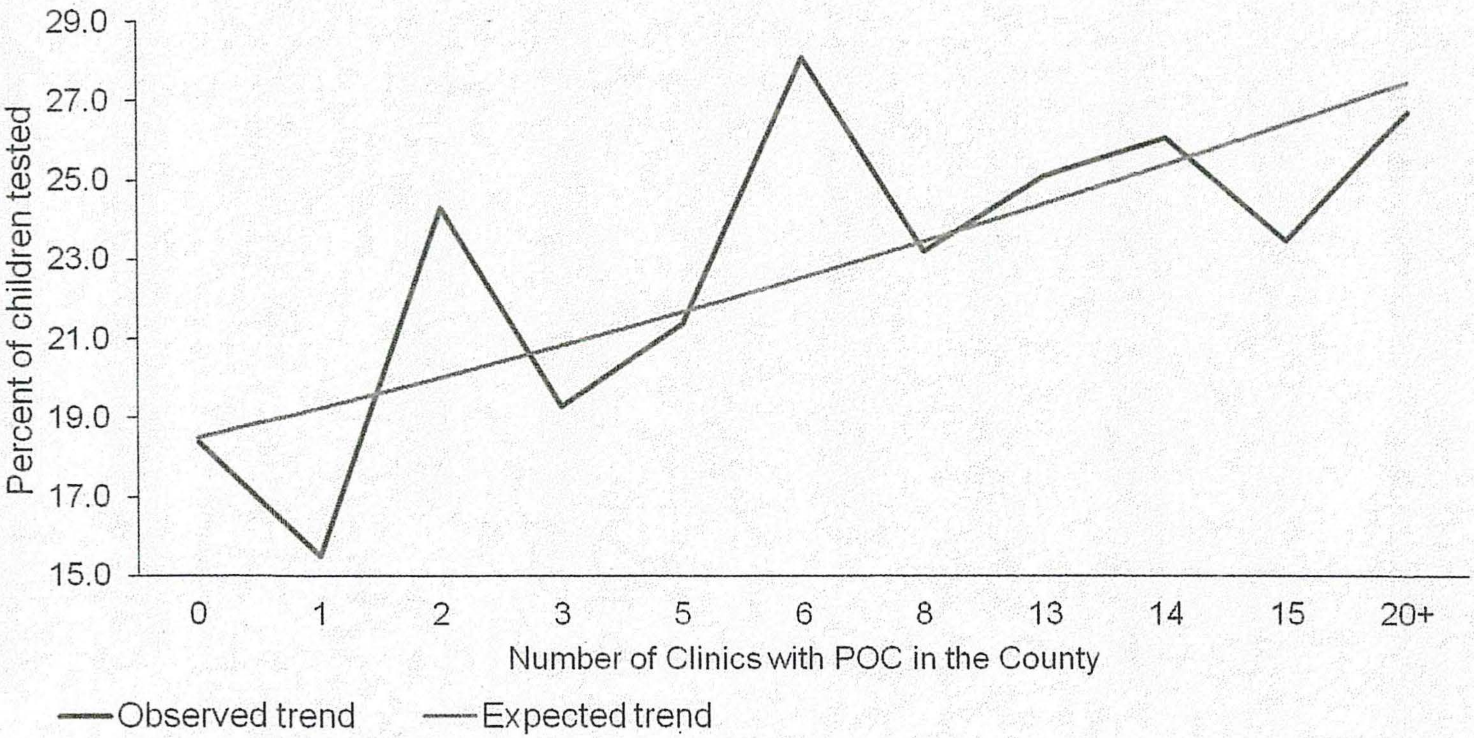
It is expected children going to establishments with access to POC more likely to be tested for lead than children going to establishment with no access to POC.

Establishments/Clinics with and without POC and Blood Lead Testing

Establishments	Number of Clinics	No. of Test	Average
With POC	119	41,028	345
No POC	1,371	110,189	80
Total	1,490	151,217	102

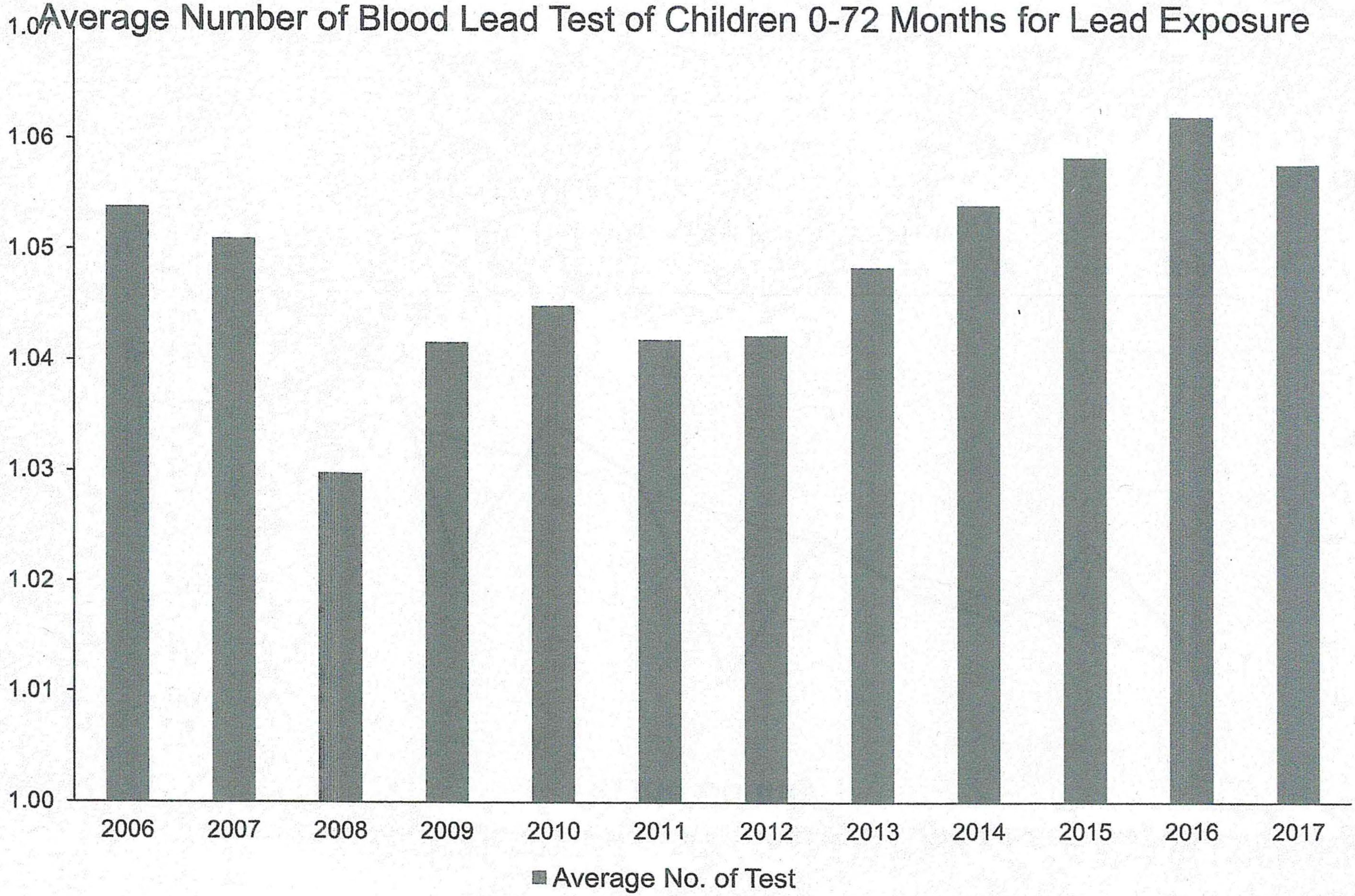
The breakdown is based on establishment address as provided in blood lead report. Within the limitations of the accuracy/correctness of the data, findings of the table should be interpreted with caution.

Number of Clinics with POC and Average Blood Lead Testing in the County

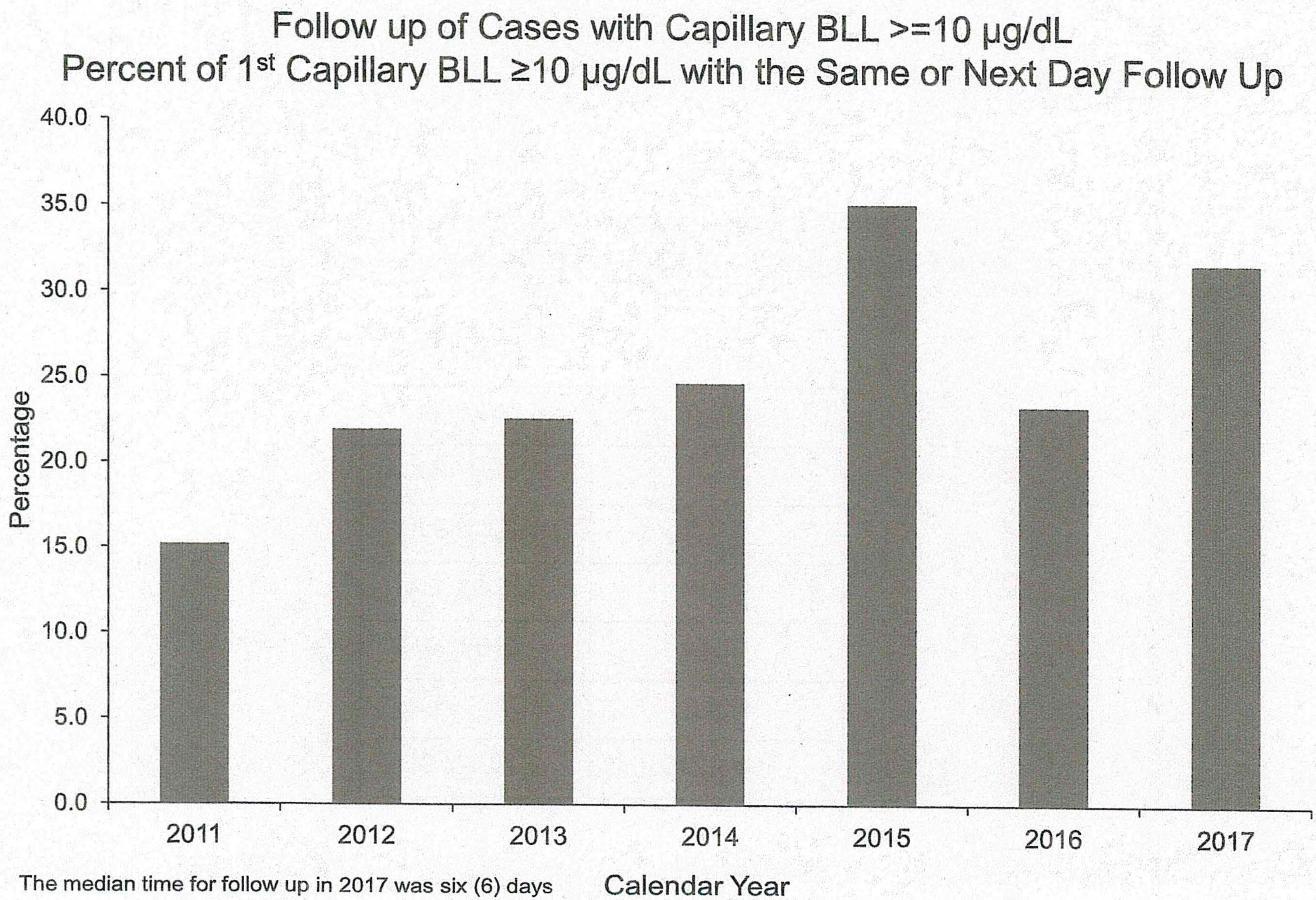


Impacts of state initiatives

Availability of POC may increase number of test per child



Impacts of state initiatives on Blood Lead Testing



The median time for follow up in 2017 was six (6) days

Program Achievements

Percentile of Children 0-72 Months Tested for Lead in 2017with Blood Lead Level Below CDC "Reference Value" of 5 µg/dL.

Age Group	Percentile
Under One	98.8
One Year	98.6
Two Years	98.6
Three Years	97.6
Four Years	98.0
Five Years	98.3
All Ages	98.5

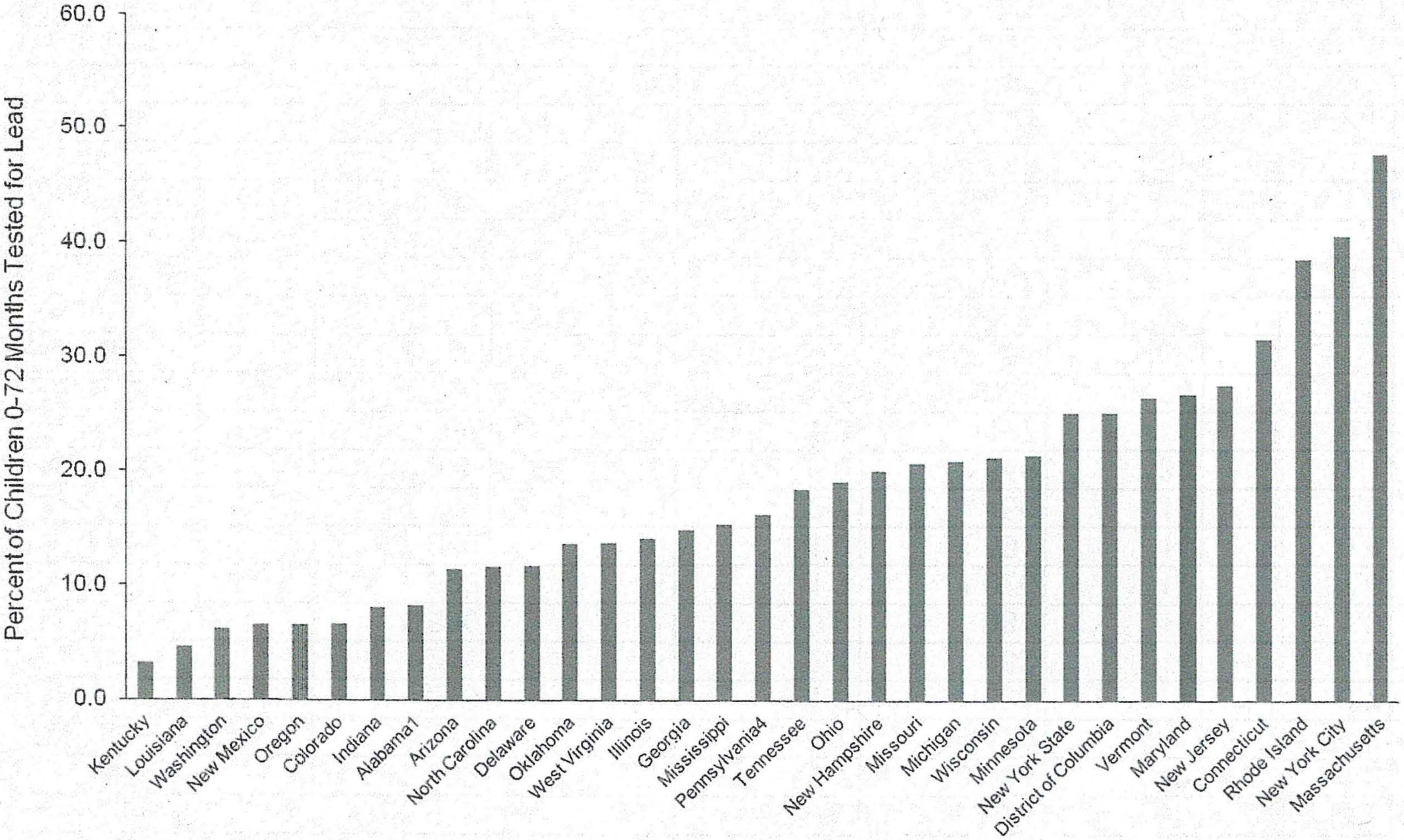
CDC Reference value is based on NHANES data which shows 97.5% of children 1-5 years have blood lead level below 5 µg/dL.

COUNTY	Occupancy Status					
	Owner Occupancy			Rent Occupancy		
	Number of Children	Children with BLL ≥5		Number of Children	Children with BLL ≥5	
		Number	Percent		Number	BLL>=5
Allegany	331	19	5.7	792	18	2.3
Anne Arundel	5,978	36	0.6	5,693	35	0.6
Baltimore	12,309	137	1.1	3,973	49	1.2
Baltimore City	7,143	333	4.7	9,420	451	4.8
Calvert	313	3	1.0	594	4	0.7
Caroline	251	6	2.4	462	14	3.0
Carroll	1,530	14	0.9	981	10	1.0
Cecil	593	8	1.3	1,076	17	1.6
Charles	998	10	1.0	1,591	14	0.9
Dorchester	186	5	2.7	456	13	2.9
Frederick	2,522	19	0.8	2,646	30	1.1
Garrett	267	5	1.9	127	1	0.8
Harford	2,420	21	0.9	2,280	34	1.5
Howard	2,438	19	0.8	2,983	35	1.2
Kent	44	1	2.3	159	2	1.3
Montgomery	11,502	72	0.6	13,324	114	0.9
Prince George's	12,009	172	1.4	10,283	157	1.5
Queen Anne's	318	3	0.9	418	4	1.0
Saint Mary's	598	3	0.5	883	8	0.9
Somerset	189	1	0.5	203	5	2.5
Talbot	240	4	1.7	405	5	1.2
Washington	1,268	18	1.4	1,513	24	1.6
Wicomico	736	3	0.4	1,521	30	2.0
Worcester	267	4	1.5	655	12	1.8
Statewide	64,450	916	1.4	62,454	1,086	1.7

Program Achievements

Nationwide Blood Lead Testing of Children 0-72 Months

Source: CDC, 2016 data

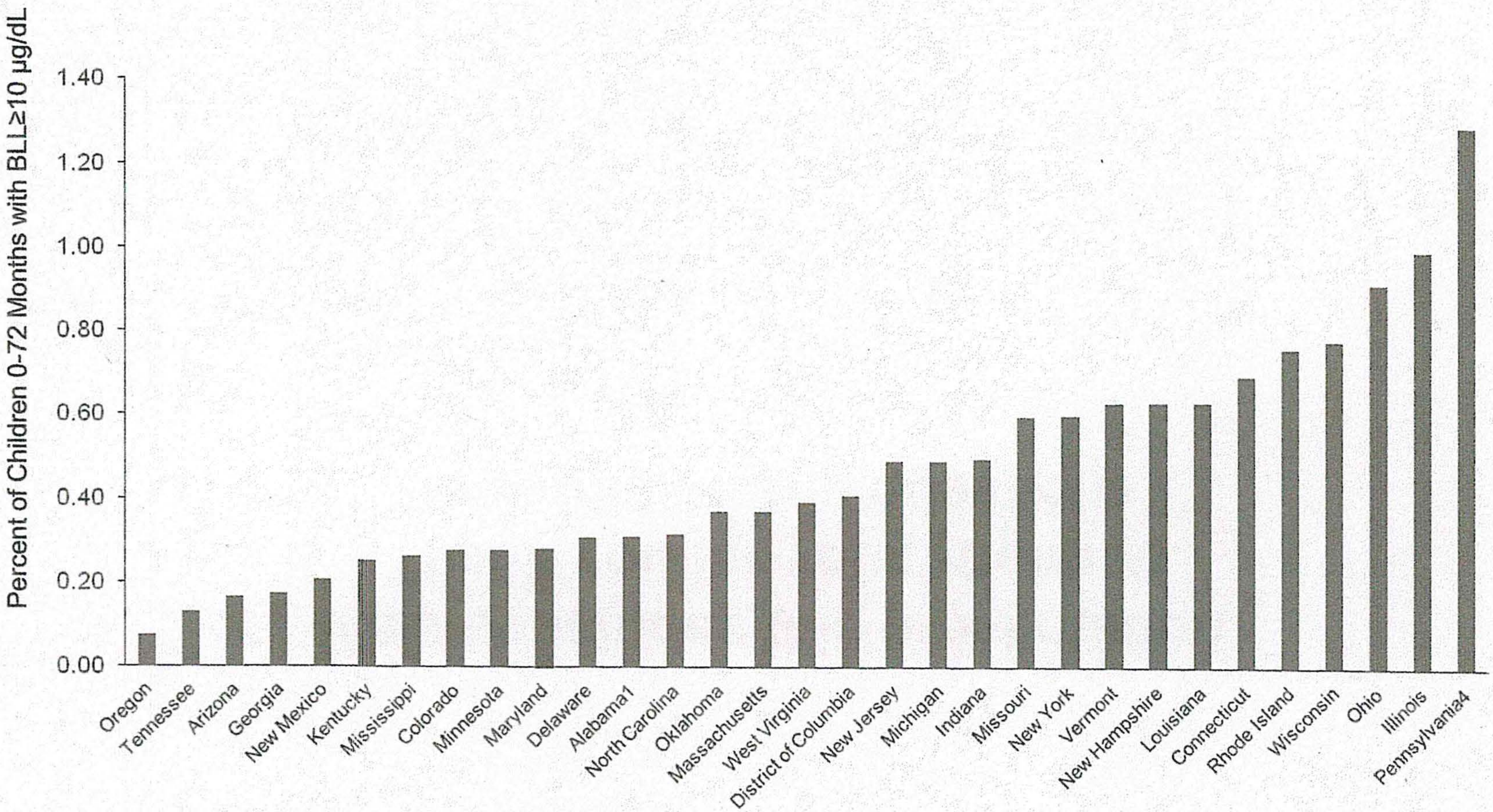


Twenty two states do not provide data to CDC

Program Achievements

Nationwide Percent of Children 0-72 Months with BLL ≥10 µg/dL

Source: CDC, 2016 data



Twenty two states do not provide data to CDC

This concludes this presentation.
Thank you for your attention.
Do you have any questions?

DECEMBER 6, 2018

LEAD POISONING PREVENTION COMMISSION MEETING

GUESTS

Governor's Lead Commission Meeting Attendance Sheet

December 6, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name	Representing	Address/Telephone/Email
Dawn Joy	AMA	
Elizabeth Heitz	MDH	elizabeth.heitz@maryland.gov
Shante Branch	MDE	
Camille E Bu[illegible]	BCHD	
Mrs Stant	GHHI	[illegible]
Jack Daniels	MD DHCD	

NOTICE

This Notice is provided pursuant to § 10-624 of the State Government Article of the Maryland Code. The personal information requested on this sign-in sheet is intended to be used to contact you concerning further information about the subject of this public hearing or meeting. Failure to provide the information requested may result in you not receiving further information. You have the right to inspect, amend, or correct this sign-in sheet. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or State law.

SIGN-IN MEMBERS

Governor's Lead Commission Meeting Attendance Sheet

December 6, 2018

PLEASE NOTE: This sign-in sheet becomes part of the public record available for inspection by other members of the public.

Name/Signature	Representing	Telephone/Email
BOSCAK, Shana G.	Parent of a Lead-Poisoned Child	
COOPER, Benita	Maryland Insurance Administration	
DAVIS, Anna L.	Child Advocate	
HALLER, Mary Beth	Local Government	
KLEINHAMMER, Susan	Hazard ID Professional	
MARTONICK, John P.	Property Owner Pre 1950 Outside Baltimore City	
McLAINE, Patricia	Child Health/Youth Advocate	
MITCHELL, Cliff	Department of Health and Mental Hygiene	
MONTGOMERY, Paula	Secretary of the Environment or Designee	
MOORE, Barbara	Health Care Provider	
NEWTON, Leonidas	Property Owner Post 1949	
PAUL, Manjula	Office of Child Care/MSDE	
PEUSCH, Christina	Child Care Providers	
SCOTT, John	Insurer for Premises Liability Coverage in the State	
SKOLNIK, Adam	Property Owner Pre 1950	
VACANT	Baltimore City Housing	
VACANT	Financial Institution	
VACANT	Maryland House of Delegates	
VACANT	Maryland Senate	

LEAD POISONING PREVENTION COMMISSION

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Thursday, December 6, 2018
9:30 a.m. - 11:30 a.m.
AERIS Conference Room

I. Welcome and Introductions

II. Old Business
Update on Strategic Planning Meeting – January 10, 2019
Update on Lead Commission Awards
Baltimore City HUD Grant Program Quarterly Report
Lead Legislation
Other Old Business

III. New Business
DHCD 1st Quarter Update
Baltimore City Housing – update on on-line registration for rental properties and rental license inspection process – Jason Hessler

Future Meeting Dates: The next Lead Commission Meeting is a strategic planning meeting, scheduled for Thursday, January 10, 2019, 2018 at MDE in the AERIS Conference Room – Front Lobby, 9:30 am – 11:30 am

IV. Agency Updates
- A. Maryland Department of the Environment
- B. Maryland Department of Health
- C. Maryland Department of Housing and Community Development
- D. Baltimore City Health Department
- E. Baltimore City Department of Housing and Community Development
- F. Office of Childcare
- G. Maryland Insurance Administration
- H. Other Agencies

V. Public Comment

GOVERNOR'S LEAD POISONING PREVENTION COMMISSION
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

MDE AERIS Conference Room
December 6, 2018

APPROVED Minutes

Members in Attendance
Anna L. Davis (via phone), Susan Kleinhammer, Cliff Mitchell (via phone), John Martonick, Patricia McLaine, Paula Montgomery, Barbara Moore (via phone), Leonidas Newton, Manjula Paul (via phone), Christina Peusch, Adam Skolnik

Members not in Attendance
Shana G. Boscak, Benita Cooper, Mary Beth Haller, John Scott

Guests in Attendance
Shante Branch (MDE), Camille Burke (BCHD), Jack Daniels (DHCD), Elizabeth Heitz (MDH), Jason Hessler (BCDH), Dawn Joy (AMA), Wes Stewart (GHHI)

Welcome and Introductions
Pat McLaine called the meeting to order at 9:35 AM with welcome and introductions.

Approval of Minutes
A motion was made by Adam Skolnik, seconded by John Martonick to accept the November 2018 minutes. Eight Commissioners were in favor, two abstained. The minutes were approved.

New Business – part 1
Baltimore City Housing Update: On-line rental property registration, rental license inspections
Jason Hessler, Baltimore City Housing Department, distributed copies of the Baltimore City Rental License Requirements; lead paint certification section is on page 6. City Council passed a bill this year to require all rental properties to be registered. Previously, one and two family dwellings had been exempted. Applicants must complete the Lead Paint Certification information (Part C of the registration) and must register on-time. Based on information provided about the age of the property (built after 1978 – yes or no), the application requires information for any affected property. This information can be used by MDE for compliance. Baltimore City hopes to raise the quality of housing stock over-all by use of this new registration process. With regards to inspections, Baltimore City has gone to third party inspections in order to get inspections done. The Department does not have enough staff to inspect all properties but has learned lessons from past problems in Maryland. Inspectors must be a licensed home inspector and must register with Baltimore City. The City can take action if needed and can examine all inspections and if problems are identified, can easily remove inspectors from the list. Inspectors must pass a national test to become a home inspector. All previously licensed individuals received a letter from the City telling them to register. The City plans to do quality

control on inspections. A question was asked: if a property with a current multi-family license expires in July, must the owner pay to register by January with a new inspection prior to expiration? Answer: Registration has been required for several years and the date has now been moved to December 31 with new inspections done by December 31. License is issued for a two-year period. There is an incentive to maintain properties and address problems in a timely fashion. If owners have a good record and abate any identified problem within 30 days, license period can expand to 3 years. If the owner takes more than 90 days to abate an identified problem, they can only get a one-year license. The City expects there will be less need to visit properties monthly. Question: will Baltimore City Housing Department extend the deadline? Answer: not clear at this time. It is in the interest of property owners to be licensed. The sheriff's office will check licenses for any scheduled eviction. If no license, the issue will go back to the courts (it would be an illegal eviction). Question: Some people are confused about Baltimore City registration and MDE registration. Is there something both agencies can do? Answer: MDE and Baltimore City can look at email communication to encourage registration for both. Question: Is there any regulation governing fees for inspection? Answer: There are none – range is $50 to $200. Most individuals coming to training charge $100 - $125. More than 300 inspectors are on the list, 999 in the state. Enrollment in home inspection classes is up. Camille Burke noted that all open lead violations have now been added to the CHIP system managed by Baltimore City Housing. The Housing Department's legal group now has a lead position and has taken over jurisdiction for prosecuting lead violations. Housing digitized all notices in 2004 and has now digitized health notices from the lead cases. Housing is in a better position to identify multiple solutions for communities that factor lead in.

Old Business

Pat McLaine noted articles about other sources of lead contamination that were distributed by email and included with handouts today: a water crisis in Newark (indicating that drinking water there was contaminated by lead) and an investigation of lead in spices, herbal remedies and ceremonial powders in North Carolina. In addition, one article reporting on EPA settlement with door and window installer in West Chester, Pennsylvania who will pay a $17,500 penalty to resolve alleged violations of the RRP Rule. EPA is conducting awareness campaigns in Philadelphia about these rules. Another article from the Daily Record indicated that the Supreme Court had rejected appeals from Sherwin-Williams Co. and ConAgra Brands, Inc. leaving intact a ruling requiring them to pay more than $400 million for lead paint remediation in California.

Update on Strategic Planning Meeting January 10 2019

Paula Montgomery reported that MDE has secured Oakland Mansion, Sterrett Room in Columbia for the meeting. Secretary Grumbles and Horacio Tablada have a conference call scheduled with a facilitator at noon today to clarify how facilitation will be done before questionnaire is put out to the Commissioners. The approach will be broad – where is the Commission going? What is the broad strategy for the Commission? We will have a light breakfast and lunch paid for by two Commissioners. There are only 40 seats in the room and everyone will need to RSVP in order to attend. If more than 40 respond, it will be first come, first serve. Pet will send an email out next week identifying that the January meeting will not be held at MDE but will be rescheduled for another place ant time. The meeting will be held from 9:00 to 3:30, set up at 8:30. The facility is available until 4:30. The facility provides linens, set-up and breakdown. Paula Montgomery will check with the facilitator about any equipment needed. This will be open to the public with public input at specific times during the agenda. Question: what is the estimated size of the crowd? Not known at this time. Paula Montgomery stated that community guests should have the opportunity to participate. Adam Skolnik stated that the Commission should be creating the strategic plan and have input from the general public. Usually these are 3-5 year plans. Cliff Mitchell noted that this is the strategic plan of the Commission and suggested that we should seek public input before the meeting – a request for written comments to go to the chair. This should represent the work of the Commission. Cliff Mitchell asked if an email could be sent to stakeholders to submit written comments about the strategic plan so that Commissioners could receive comments in advance. Paula Montgomery stated that comments should occur during the meeting. Adam Skolnik stated that the Commission clearly needs a mission statement and Commissioners should hash that out. He added that we can ask for comments from the public at the meeting; there should be natural points where public comment can be allowed without bogging the process down. Having a digital form for feedback in advance will be helpful. Paula Montgomery stated that Secretary Grumbles will decide. John Martonick recommended soliciting comments prior to the meeting. When the long-range plan is developed in draft form, the Commission should make a second attempt to solicit comments from the general public. The process would include comments made prior to the meeting and comments solicited after the meeting. Christina Peusch agreed that there should be an opportunity prior to and after the meeting and suggested that we set aside time at the end of the agenda for input by the public. Adam Skolnik suggested that the Commission give input to the moderator. Paula Montgomery asked if we could make public comments generic. Barbara Moore agrees that having comments ahead of the meeting, at target times during the meeting or at the end would be best so we can stay on track. Manjula Paul stated that she would prefer getting information prior to the meeting so that the Commission knows community's input. Anna Davis agreed. Wes Stewart stated that GHHI was concerned that the meeting be open and that the public have time to make comments. Adam Skolnik indicated that he will create a digital form option for Commissioners and guests. Paula Montgomery indicated that she would try to get the form out early next week with a return deadline of January 2nd. Barbara Moore asked if the form would go to stakeholders, including local health departments. Cliff Mitchell agreed that the local health departments should receive the form and notice about the meeting along with active organizations including GHHI and National Center for Healthy Housing. He asked how the Commission could solicit input from affected communities. Barb Moore suggested that other such individuals be informed by email. Christina Peusch suggested that Commissioners ask their constituents what their ideas were about the goals of the Commission.

Update on Lead Commission Awards

Christina Peusch presented additional written recommendations for the awards. A motion was made by Susan Kleinhammer to accept the format for awards as amended to start August 2019, seconded by Leon Newton. All present Commissioners were in favor – the motion passed.

HUD Grant Program
The Quarterly Report for July through September 2018 was distributed. There were no questions.

New Business – part 2
Maryland Department of Housing and Community Development – First Quarter FY 2019 Report
Jack Daniels distributed one page report from the Special Loans Program. He indicated that DHCD will spend all the money allocated for this year, probably by February or the end of the third quarter. Abatement expenses for the first quarter have been $716,000 for 9 properties statewide, 2 properties in Baltimore City and 2 properties for the Healthy Homes 4 Healthy Kids Program. Regarding the Healthy Homes 4 Healthy Kids Program: applicants are meeting the four basic requirements of the program but many other repairs are needed to ensure structural integrity and costs per unit are high. DHCD has received approval for vendor/contractor from the Department of Public Works and presently has a list of 5 inspectors who can do inspections. DHCD has sent out 7 projects and will receive back scope of work on 5, which should cut down the time to completion. Question: what about relocation: Answer: DHCD has no contracts for this. Based on the time frame, the agency will put together a plan for the families. Some families have multiple animals. They are able to find 6-mos short term lease arrangements, use month to month facilities and have looked at hotels. Some projects are taking 10 months. Question: any thought about using safe houses? Answer: it gets very complicated with kids in school, fair market rents, and transportation issues. Jack Daniels stated that it is difficult to find relocation placements. The scope of the projects is much larger now. Pat McLaine noted that this is not a new problem: it is the same problem that the HUD grant programs faced in the 1990s so loans were targeted to units that were basically structural sound. Jack Daniels indicated that the programs were able to use state funds to help deal with structural soundness. Christina Peusch asked if there had been a prior history of not being able to spend the money. Jack Daniels indicated that DHCD is getting more volume and has more partnerships. There are new staff and DHCD is cross-training inspectors to identify lead issues. Jack Daniels also indicated that most of the lead funding is in the form of grants. Loans may be set up for 20 years and equity affordability issues are common.

Lead Legislation
Wes Stewart asked if the Commission intended to introduce legislation to lower the action level. Susan Kleinhammer stated she would love to see data on the number of moderate risk reductions required currently for children with blood lead levels of 10µg/dL and higher who are living in rental housing. What would be the impact on the housing stock if the number of moderate risk reductions were increased? Introducing a new term for reference level could be difficult – would this trigger a modified risk reduction? Adam Skolnik stated that as soon as Flint Michigan occurs here, every property owner must do a modified risk reduction even if the problem is the lead in water. He stated that the Health Department should be involved if the blood lead level was 5µg/dL or higher. Paula Montgomery stated that the Lead Poisoning Prevention Program's budget was cut last year and many people were not clear about the implications of this. Adam Skolnik suggested that the Commission could initiate conversations around this matter. Pat McLaine noted the clear need to investigate other sources and the need to use standard format –

HUD Chapter 16 – to investigate cases. Adam Skolnik added that once the source(s) is/are identified, the investigation needs to trigger remediation of the source(s). Adam Skolnik will pull together a small group to look more at this. Susan Kleinhammer will draft a letter of support for legislation that can be voted on at our February meeting.

Future Meeting Dates

The all-day Lead Commission Strategic Planning Meeting is scheduled for Thursday, January 10, 2019 at the Oakland Mansion, Sterrett Room in Columbia, from 9:00AM to 3:30 PM. The next Lead Commission Meeting is scheduled for Thursday, February7, 2019, at MDE in the AERIS Conference Room – Front Lobby, 9:30 – 11:30 AM.

Agency updates

Maryland Department of Environment – nothing more to report

Maryland Department of Health – Cliff Mitchell reported that MDH has received inquiries from a managed care organization (MCO) about tracking blood lead data in ImmuNet which reflects the success of broadening adaptation of ImmuNet. MDH will work with MDE to translate data accurately to ImmuNet. There is more interest by MCOs in having access to the Childhood Lead Registry data on an on-going basis. In addition, MDH is continuing to work on the Medicaid program focused on lead and asthma, has begun making site visits, and will provide on-going reporting on the rollout of the program.

Maryland Department of Housing and Community Development – nothing more to report

Baltimore City Health Department – Camille Burke notified the Commission that the Health Department was meeting with Baltimore City Council about lead. Regarding a recent Office of the Inspector General report of inappropriate use of funds from lead revenue accounts, Camille Burke stated that response by the Health Department is pending.

Baltimore City Housing and Community Development – nothing more to report

Office of Child Care – nothing to report

Maryland Insurance Administration – nothing to report

Public Comment

Wes Stewart indicated if the Commission was interested in looking at the lead paint lawsuit in California, we should look at this option. Question: would landlords be brought in? Can the Attorney General initiate this? Answer: it is a public policy decision. It would be good to brief the Commission about the law suit. Similar suit was brought by the AG's office in Rhode Island. GHHI would be willing to help secure a speaker if desired.

Adjournment

A motion was made by Adam Skolnik to adjourn the meeting, seconded by Susan Kleinhammer. The motion was approved unanimously and the meeting was adjourned at 11:37 AM.

Baltimore City Rental Licensing Requirements

JASON HESSLER, ACTING DEPUTY COMMISSIONER

KATHLEEN BYRNE, ACTING ASSISTANT COMMISSIONER FOR LITIGATION

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT, PERMITS AND CODE ENFORCEMENT

410-396-3575

Rental Licensing Highlights

1) All rental units must be licensed – expands licensing to include 1 and 2 dwelling units.
2) All rental units must pass an inspection performed by State Licensed Home Inspectors that are registered with Baltimore City to obtain license.
3) DHCD will provide the inspection form with certification that must be submitted.
4) Tiered license expiration based on property owner's compliance with code.
5) Commissioner may suspend or revoke a rental license if owner is in violation.
6) All rental units must have a sanitation plan educating tenants on proper waste disposal and storage.
7) Goals of the legislation include improving overall quality of housing stock in Baltimore City, creating healthier spaces places for tenants to live and providing more even playing field for all landlords
8) **<u>All rental units must be licensed by January 1, 2019</u>**

Property Registration vs. Licensing

MUST REGISTER

All non-owner occupied dwellings, whether occupied, vacant, producing revenue, not producing revenue, habitable or not habitable

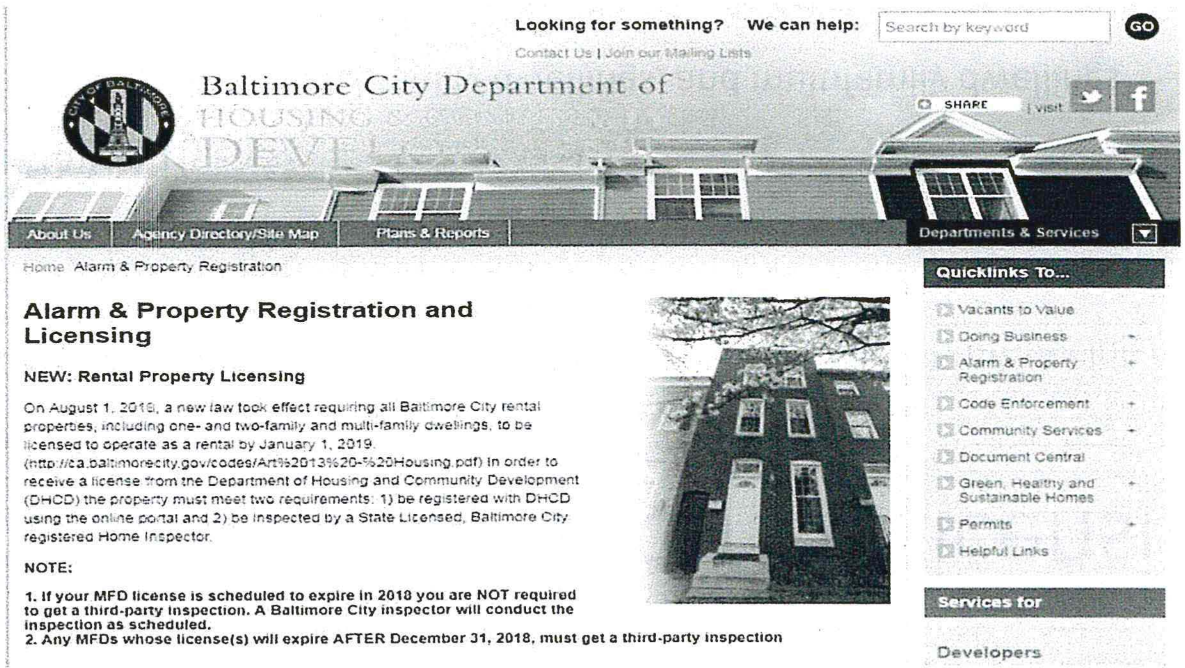
MUST OBTAIN A LICENSE

All rental properties, 1 and 2 family dwellings, and multifamily dwellings

If you need a license, you need to register FIRST.

How does a landlord get started?

Go to the following link: http://dhcd.baltimorehousing.org/property_registration


Looking for something? We can help: Search by keyword GO

Contact Us | Join our Mailing Lists

Baltimore City Department of Housing & Community Development

SHARE | visit

About Us | Agency Directory/Site Map | Plans & Reports | Departments & Services

Home Alarm & Property Registration

Alarm & Property Registration and Licensing

NEW: Rental Property Licensing

On August 1, 2018, a new law took effect requiring all Baltimore City rental properties, including one- and two-family and multi-family dwellings, to be licensed to operate as a rental by January 1, 2019. (http://ca.baltimorecity.gov/codes/Art%2013%20-%20Housing.pdf) In order to receive a license from the Department of Housing and Community Development (DHCD) the property must meet two requirements: 1) be registered with DHCD using the online portal and 2) be inspected by a State Licensed, Baltimore City registered Home Inspector.

NOTE:

1. If your MFD license is scheduled to expire in 2018 you are NOT required to get a third-party inspection. A Baltimore City inspector will conduct the inspection as scheduled.
2. Any MFDs whose license(s) will expire AFTER December 31, 2018, must get a third-party inspection

Quicklinks To...

- Vacants to Value
- Doing Business
- Alarm & Property Registration
- Code Enforcement
- Community Services
- Document Central
- Green, Healthy and Sustainable Homes
- Permits
- Helpful Links

Services for

Developers

Everything is on the website

Property Owners/Operators

The Baltimore City Code, Article 13, Subtitle 4-2, requires every owner of a non-owner occupied dwelling unit, "whether occupied or vacant, whether it is producing revenue or not producing revenue, whether habitable or not habitable" shall file a registration statement with the Housing Commissioner. This must be done within 10 days of any transfer of the property and every January 1st thereafter.

To complete your registration and licensing requirements:
Click here to set up new account

Log in here if you previously set up an account

State Licensed Home Inspectors

To become a Baltimore City Registered Home Inspector or to access your account, **click here.**

Inspection Forms
Baltimore City Rental License Inspection Form

Addendum to Rental Licensing Checklist for Multifamily Properties

Inspection Checklist Guidance Document

List of Registered Home Inspectors
Click here for a list of Baltimore City Registered Home Inspectors

Rental Property Resources and Information

Registration and Licensing Information sheet

Baltimore City Rental License Inspection Form

Addendum to Rental Licensing Checklist for Multifamily Properties

Sanitation Guide

New Licensing Requirement Brochure

Baltimore City Code, Article 13

- Subtitle 4 – Registration of Non-Owner-Occupied Dwellings, Rooming Houses and Vacant Structures
- Subtitle 5 – Licensing of Rental Dwellings
- Subtitle 5 – Licensing of Rental Dwellings

Frequently Asked Questions

Registration Requirements

1. Complete registration online:
   - a. Create an account at: http://dhcd.baltimorehousing.org/property_registration
   - b. Enter all required property and owner/agent/management information
     - i. A description of the premises by street number
     - ii. Name, street address, telephone number, and email address of the premises' owner of record
     - iii. Name, street address, telephone number, and email address of the premises' managing operator, if other than the owner, AND
     - iv. If the owner is a corporation, partnership, limited partnership, limited liability company or similar entity, the name, street address, telephone number, and email address of a natural person who services as the owner's Chief Executive Officer, Managing Partner, or Managing Member, or in a similar authoritative position.
   - c. Complete the Lead Paint Certification (Compliance with Lead Poisoning Prevention Law) required information for each residential unit

Unit Number:

1. Is this a rental property? Yes No
2. Was the property built after 1978? Yes No
3. Is the property/unit certified lead free or limited lead free? Yes No
4. Is the property/unit currently registered with the Maryland Department of Environment(MDE)? Yes No
5. Please provide your MDE registration number:
6. Please provide Lead Inspection Certificate Number for the current tenancy of this unit (required under 6-815(c) of the MD. Ann. Code, Environment Article.)

Save

2. Make payment online
   - All 2019 registration fees must be paid before January 1, 2019

Licensing Requirements

1. Register the property.

2. Abate any open violation notices.

3. Complete inspection requirements:
   - a. Schedule an inspection with a City-registered, State Licensed Home Inspector.
   - b. Pass that inspection
   - c. Log into your property registration account, and upload the inspection checklist(s) filled out by the inspector
   - d. Owners/landlords must have their inspections completed and results uploaded by December 31, 2018 in order to be in compliance with the law.

Search open violations

Go to the following ling: http://dhcd.baltimorehousing.org/code_enforcement

Housing Code Enforcement

To maintain safe and attractive neighborhoods throughout the city, DHCD's Code Enforcement Division enforces the city's housing, zoning, building and related codes. Recently the division was reorganized and restructured to increase efficiency while making it more accessible to Baltimore residents. Working together, we are a powerful team, committed to maintaining the appearance and value of Baltimore's neighborhoods.

This web site was created to help landlords, homeowners, renters and community groups understand the many codes and how residents can work with us to help keep neighborhoods strong by providing aggressive and equitable code enforcement.

Get answers to frequently asked questions and information on owner and tenant responsibilities.

Penalty surcharge: click here for regulations and form for work conducted without a permit.

Report potential violations

To report potential housing and sanitation violations, please call 311 or use our online CitiTrack Service Request System

Find Your Area Office

Find the phone number and address.

View Active Violations

See all active code violations for your neighborhood.

View Citation Photos

View photos from citations recently issued.

Home > Code Enforcement > Search Violation Notice/Citation

Search Violation Notice/Citation

Search On ◉ Violation ○ Citation

☐ By Address — House Number | Direction | Street Name | Street Suffix

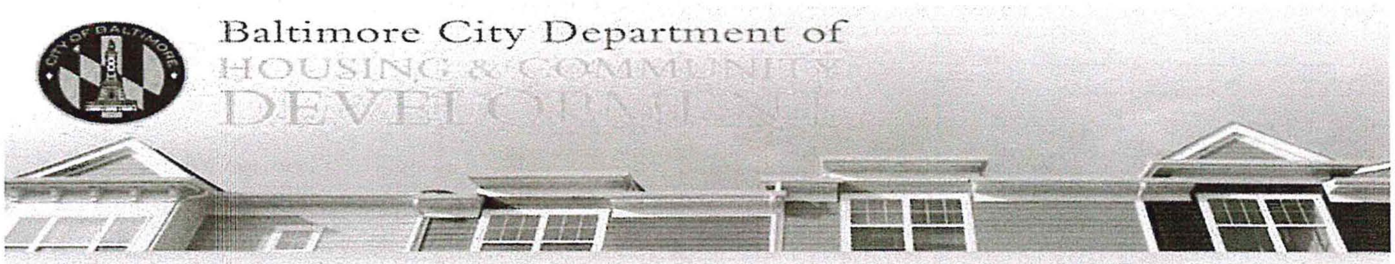
☐ By Neighborhood

Search

For more information on open violation notices/citation please contact your Housing Inspection area office. Click here for address and phone number information for the nine Housing Inspection area offices.

All Licenses are Searchable

http://cels.baltimorehousing.org/reg/Reg_MFD_Search.aspx



Home > Code Enforcement > MFD License Search

License Search:Multiple Family Dwellings, Rooming Houses and Property Registration

- [x] By Address — House Number: 610 | Dir: S | Street Name: chapel
- [ ] By Block/Lot — Block: | Lot:
- [ ] By Zip Code

Search

Record Count:1

Reg#	Date Insp	License Print	Licensed	License Expiration Date	Valid Reg Year	Address	Zip	Block Lot
035621					2017	610 S CHAPEL ST	21231	1830-062

The License

Department of Housing and Community Development   Registration No: XXXXXX

RENTAL PROPERTY LICENSE

FOR MULTIPLE-FAMILY DWELLINGS OR ROOMING HOUSES, THIS LICENSE MUST BE PROMINENTLY DISPLAYED IN THE VESTIBULE, LOBBY, OR OTHER PUBLIC PLACE ON THE PREMISES

FOR A 1- OR 2-FAMILY DWELLING, THIS LICENSE MUST BE LOCATED IN AN AREA OF EACH DWELLING UNIT THAT IS ACCESSIBLE TO THAT UNIT'S OCCUPANT AND TO HOUSING INSPECTORS

OWNER

Sam Jones
2500 Druid Hill Avenue
Baltimore, MD 21201

410-984-2845

OPERATOR

P&R Management LLC
200 Washington Blvd
Baltimore, MD 21015

410-826-1950

Property Address: 1200 N. Gay Street

Inspection Date: 1/1/2019	License Print Date: 1/5/2019
Lead Cert Updated on: xx/xx/xxxx	Registration Payment Date: 1/1/2019

BLOCK & LOT	RENTAL LICENSE EXPIRATION DATE	REGISTRATION YEAR	DWELLING UNITS	ROOMING UNITS	OTHER UNITS	OWNER OCCUPIED UNIT
	xx/xx/xxxx					

Department of Housing and Community Development

Division of Green Healthy and Sustainable Homes

Lead Hazard Reduction Program

Quarterly Report

July – September 2018

Units Receiving Hazard evaluations	46
Units with Hazards Identified	46
Units completed and cleared	22
Units in Progress	19
Units under contract	22
Training efforts	1
People trained	1
Completed Events	23
Event Attendees	1289
Home Visits	45

EPA settles with West Chester, Pa. contractor for alleged violations of "Lead Safe" renovation protections

Contact: R3press@epa.gov

(PHILADELPHIA) November 28, 2018 – Today, the U.S. Environmental Protection Agency (EPA) announced that Chapman Windows and Doors of West Chester, Pennsylvania will pay a $17,500 penalty to resolve alleged violations of the lead-based paint Renovation, Repair and Painting (RRP) Rule.

This rule protects the public from toxic lead hazards created by renovation activities involving lead-based paint. RRP safeguards are designed to ensure "lead safe" practices in the renovation and repair activities involving "target housing" built before the 1978 federal ban on lead-based paint.

EPA alleged during multiple renovations of target housing in West Chester in February 2017 that Chapman Windows and Doors, while working under the parent company Air Tight Home Improvements, violated the RRP "lead safe" requirements by:

- Failing to document whether target housing owners had timely received the required lead hazard information pamphlet titled "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools;"
- Failing to retain records to document compliance with lead-practices during renovation; and
- Failing to ensure that the renovators conducting the work were EPA-certified to conduct lead-safe renovations.

As part of the settlement, the company did not admit these alleged violations but has cooperated with EPA in resolving this matter and certifying its compliance with applicable RRP requirements.

Infants, children and pregnant women are especially vulnerable to lead exposure, which can cause lifelong impacts including developmental impairment, learning disabilities, impaired hearing, reduced attention span, hyperactivity, and behavioral problems. Because of these health risks, the U.S. banned lead-based paint in 1978. However, EPA estimates that lead-based paint is still present in more than 30 million homes nationwide.

For more information on the RRP program, visit http://www.epa.gov/lead/renovation-repair-and-painting-program .

THE DAILY RECORD
Maryland's trusted source for business, legal and government news

Supreme Court rejects lead-paint maker appeals in $400M case

By: Bloomberg Greg Stohr October 15, 2018

The U.S. Supreme Court rejected appeals from Sherwin-Williams Co. and Conagra Brands Inc., leaving intact a ruling that requires them to pay more than $400 million for lead-paint remediation in California.
The rebuff, issued without comment Monday, is a blow to business groups, which had called for high court review in the hope of derailing other suits over climate change, opioid addiction and gun violence.

In separate appeals, Sherwin-Williams and units of Conagra said the state court ruling violated their constitutional rights, penalizing them for things they said in the first half of the 20th century without proof that those statements contributed to current lead-paint problems. Ten California cities and counties sued the companies for creating a "public nuisance" by promoting lead paint.

"While we are disappointed, the Supreme Court reviews very few cases," the companies said in a joint statement after the court acted. "California's decision is an outlier and at odds with courts across the country which have correctly held that companies should not be held retroactively liable for lawful conduct and truthful commercial speech decades after they took place."

The U.S. Chamber of Commerce said the success of the lead-paint suit has spawned a string of similar cases against other industries, more than 80 filed in federal court in California and elsewhere in the last 12 months alone.

The cities and counties said the companies and their trade associations promoted lead paint as safe well after they learned that it caused irreversible neurological harm, particularly to children. Lead paint was banned in the U.S. in 1978 but remains on the walls of many homes.

"Those cumulative, coordinated promotional efforts were enormously successful, resulting in sustained, increased, and prolonged use of lead paint in residences throughout the jurisdictions," lawyers for the cities and counties argued.

A state court judge in Santa Clara County concluded after a six-week trial that the companies had created a public nuisance, and a California appeals court upheld the judgment. The trial judge later set the tentative amount the companies must pay at $409 million, a figure designed to cover the cost of inspection and abatement in more than a million homes built before 1951.

Public-nuisance lawsuits are designed to address conduct that broadly affects a community, like pollution or the storage of explosives. California has authorized government lawyers to press public-nuisance suits since 1872.

Sherwin-Williams and Conagra said they aren't opposed to all public-nuisance suits but said the case against them goes so far it violates the Constitution's due process and free speech clauses.

"Pegging public nuisance liability to prior product promotion offers a tempting, facile way to shift responsibility from government policymakers and budgets onto corporations," Sherwin-Williams argued.

Conagra said in court papers the California ruling "opens the door to potentially unbounded suits targeting manufacturers of products sold decades ago in situations where traditional common-law and constitutional protections should prevent recovery."

Tagged with: LEAD PAINT PUBLIC NUISANCE REMEDIATION

The New York Times

A Water Crisis in Newark Brings New Worries

By Liz Leyden

Dec. 3, 2018

NEWARK — As evidence mounted that Newark's drinking water was contaminated by lead, top officials began an urgent giveaway of tens of thousands of filters and told residents that the problem was limited to one of the city's two treatment plants.

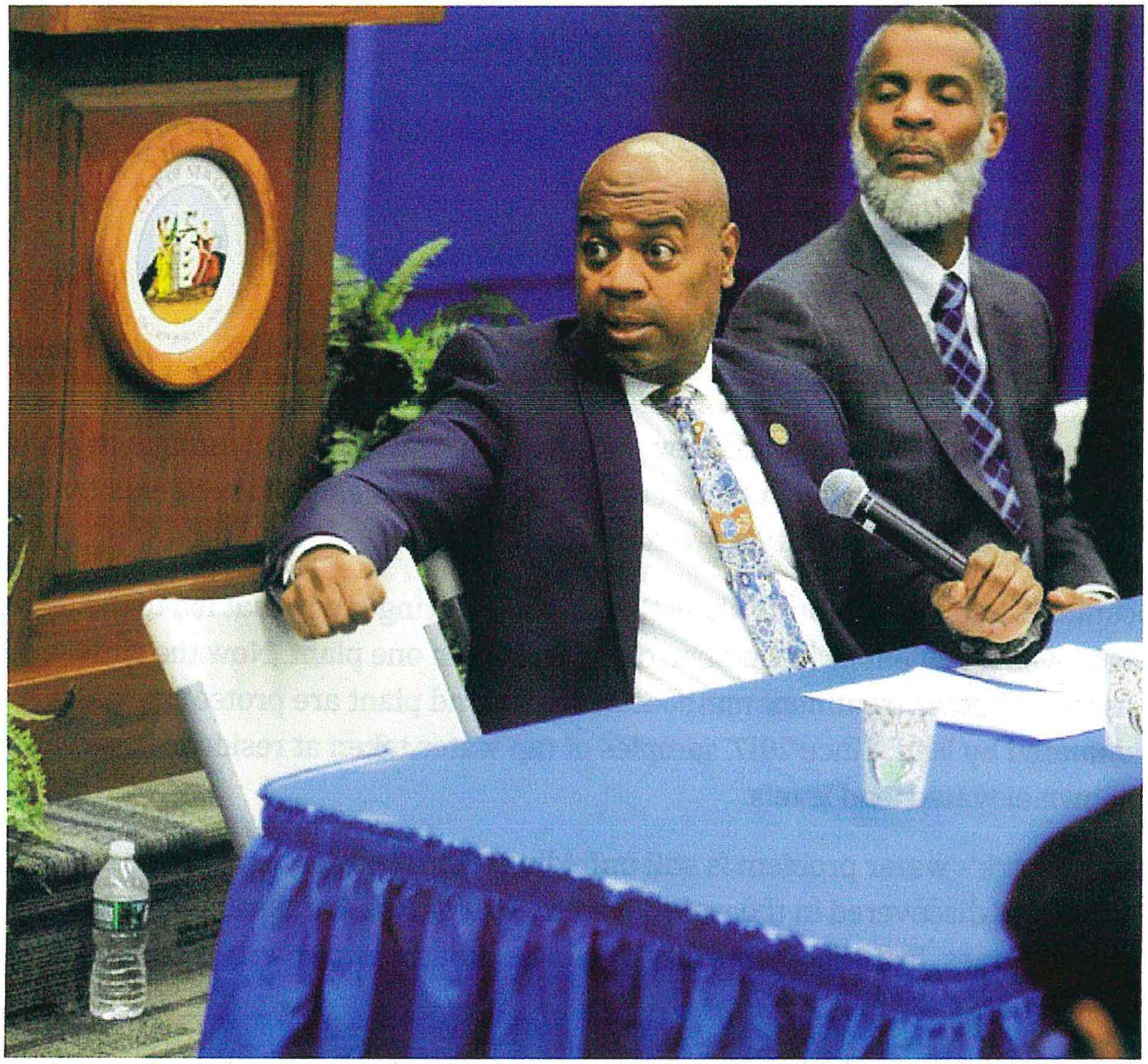
But city documents and other records show that an engineering study that led to the distribution of filters, which was made public in October, only focused on one plant. Now the state is directing Newark to assess whether treatment methods at the second plant are protecting water from being contaminated by lead. Since 2017, samples of tap water taken at residences served by that plant have shown elevated lead levels.

The extent of Newark's water problem is still unfolding. For nearly a year and a half after high lead levels were first discovered in the water system, Mayor Ras Baraka and other officials blamed aging lead pipes, insisting on the city's website that the water was "absolutely safe to drink."

But Newark changed course after the study found that lead was leaching into the water because of ineffective corrosion treatment at the city's Pequannock plant. Since July, lead levels in more than half the samples tested at homes served by the plant have exceeded 15 parts per billion, the federal threshold for action.

[What you need to know to start the day: Get New York Today in your inbox.*]*

A review of city records, obtained through a public records request, shows that lead levels recorded since January 2017 in neighborhoods served by the second plant, the Wanaque, were not nearly as high. Still, those levels, including a few above 15 parts per billion, were among the highest from the Wanaque in the past decade. One sample of residential tap water that came from the Wanaque tested at 182 parts per billion. Two of the dozens of city schools found to have high lead levels in their drinking water two years ago are served by the Wanaque.



Mayor Ras Baraka has defended Newark's response to the lead problem and has rejected comparisons to the crisis in Flint, Michigan. Julio Cortez/Associated Press

In a recent letter, state regulators also asked Newark to investigate whether elevated levels in the Wanaque service area are caused by water leaks from the Pequannock — the two water systems border each other at certain points. The city, in a written response to the state, said "blending is occurring" between the systems, most likely when pressure valves are opened during emergencies like fires and water main breaks.

City officials said the plan to distribute 40,000 filters was aimed at neighborhoods served by the Pequannock because so far there was no evidence that corrosion control was not working at the Wanaque.

"The conclusions that we have are saying that the Wanaque system is not as affected as the Pequannock," Mr. Baraka said in an interview, adding that the city had focused on areas "we know for a fact have been affected by this issue."

"The areas we are not sure about, we're telling them to continue business as usual," he added. "If you feel like you want to get tested, get tested. In the meantime, we're going to continue our overall study to make sure what we're saying is 100 percent accurate."

But the Natural Resources Defense Council, which sued Newark and the state in June, accusing them of violating federal safe drinking water laws, said the city was downplaying lead levels in neighborhoods, like the East Ward, that were served by the Wanaque. More than a fifth of samples tested at residences served by the Wanaque in the second half of last year yielded levels above five parts per billion.

"To hand wave and say there's no problem when there are numbers above the federal threshold, and when they haven't taken a recent hard look at how the corrosion control is working, is inappropriate and deeply concerning," said Erik Olson, senior director for health and food for the environmental group.

No amount of lead exposure is known be safe for children, whose mental and physical development can be impaired, according to the Centers for Disease Control and Prevention.

And many experts say that the federal action level of 15 parts per billion, established in 1991, is outdated and fails to take into account new research on the effects of lead exposure.

"It's based on old, old science," said Dr. Jennifer Lowry, a toxicologist at Children's Mercy Hospital in Kansas City, and chairwoman of the American Academy of Pediatrics' council on environmental health. "We know so much more now."

Today, Dr. Lowry added, "a health-based standard" would "certainly be below five."

When Newark's filter distribution began, the city's website described water in homes in the East Ward as "safe." A week later, the safety reference had disappeared, but language remained stating that residences served by the Wanaque "do not require a filter under this program."

At recent community meetings, city officials have said that anyone can request a water test and would receive a filter if lead levels exceeded the federal threshold. Officials declined to say how many water tests had been requested or performed since the distribution began. Last spring, the city also announced a plan to help residents replace lead pipes connecting the city's water main to residential plumbing systems.

Mr. Baraka has defended the city's response, chafing at suggestions that Newark's problems echo those of Flint, Mich., even using the hashtag #NewarkIsNotFlint.

The state said it would wait for the city to complete its new assessment before answering questions about the Wanaque.

The Natural Resources Defense Council questioned why the Wanaque had not already been studied and said the state had done a poor job of oversight.

"The state is playing catch up," Mr. Olson said. "There were all sorts of indications at least as early as 2014, 2015 that there were problems."

Danielle Fienberg, 30, has followed Newark's response with dismay.

"I cannot believe they're not giving out filters in the East Ward," she said.

After she and her husband, John, moved to the neighborhood from Queens in 2016, their 2-year-old son Theo's blood lead level was measured at 6.6 micrograms per deciliter, above the recommended limit of 5 for young children set by the C.D.C. When city officials tested the family's drinking water in January 2017, they found lead levels of 9.77 parts per billion.

Theo and his family have left Newark and moved to Elizabeth.
Sarah Blesener for The New York Times

"I knew it was in the schools," she said. "I didn't think it was in my house."

The Fienbergs immediately stopped drinking from the tap. Three months later, Theo's blood lead level fell by half. Ms. Fienberg said she was relieved, but felt guilty that she had let him drink the water in the first place.

"He'd wake up at 6 and the very first thing I'd do would be fill his sippy, half water, half apple juice," Ms. Fienberg said. "Now I know, with lead, that very first cup of water from the tap is the worst."

Theo was later diagnosed with autism and a form of attention deficit hyperactivity disorder. The Fienbergs do not believe either was caused by the lead exposure but that it did exacerbate his symptoms.

Their younger daughter was born without complications, but the family soon moved to Elizabeth.

“I told all of my friends, they thought I was crazy — I told them to have their water tested,” she said. “Nobody listened.”

A version of this article appears in print on Dec. 4, 2018, on Page A21 of the New York edition with the headline: Newark's Water Crisis Might Be Worse Than It Realized

Special Loan Programs

(as of 09/30/18)

	FY17		FY18		FY19		FY19	
	Actuals		Actuals		Goals		Actuals	
	$$	Units	$$	Units	$$	Units	$$	Units
Program:								
Group Homes (units = beds)								
Federal (HOME/SHOP)	$0		$0		$0		$0	
State	$1,240,694	33	$260,060	4	$1,000,000	15	$0	0
Totals	$1,240,694		$260,060		$1,000,000		$0	
Loan Size per Bed - Total	$37,597		$65,015		$66,667		#DIV/0!	
Loan Size per Bed - State	$37,597		$65,015		$66,667		#DIV/0!	
MHRP	$3,109,397	67	$3,671,364.00	96	$3,100,000	90	$1,104,902.00	29
Average Loan	$46,409		$38,243		$34,444		$38,100	
IPP	$174,989	12	$368,633	19	$200,000	10	$204,290	8
Average Loan	$14,582		$19,402		$20,000		$25,536	
STAR	$256,991	2	$1,178,172	9	$1,000,000	8	$537,623	5
Average Loan	$128,496		$130,908		$125,000		$107,525	
MHRP Category Reporting	$4,267,573	129	$5,604,189	186	$4,500,000	160	$1,542,803	48
Average Loan	$33,082		$30,130		$28,125		$32,142	
Accessible Homes for Seniors	$983,187	50	$1,564,192	71	$1,200,000	60	$233,611	11
Average Loan	$19,664		$22,031		$20,000		$21,237	
Lead - State	$1,152,726	65	$991,489	53	$1,400,000	75	$328,849.00	9
Average Loan	$17,734		$18,707		$18,667		$36,539	
Lead - Baltimore City	$623,413	49	$202,827	21	$500,000	35	$50,000	2
Average Loan	$12,723		$9,658		$14,286		$25,000	
Lead - Healthy Homes 4 Healthy Kids #1			$498,194	35	$4,166,667	100	$337,175	2
Average Loan			$14,234		$41,667		$168,588	
STATE FUNDS	$6,660,993	227	$8,377,246.00	316	$11,566,667	350	$2,258,827	38
FED (HOME) FUNDS	$256,991	2	$1,178,172	9	$1,000,000	8	$537,623	5

MHRP + IPP + AHSP TOTAL	$4,267,573	129	$5,604,189	186	$4,500,000	135	$1,542,803	48
LEAD TOTAL	$1,152,726.00	65	$1,692,510	109	$1,900,000	110	$716,024	13
SPECIAL LOAN PROGRAMS	$5,420,299	194	$7,296,699	295	$6,400,000	245	$2,258,827	61
GROUP HOME - STATE	$1,240,694	33	$260,060	4	$1,000,000	12	$0	0
ALL SPECIAL LOANS PROGRAMS	$6,660,993	227	$7,556,759	299	$7,400,000	257	$2,258,827	61
ALL SPECIAL NEEDS ALLOC - STATE	$7,669,404	246	$8,377,246	316	$7,400,000	257	$2,258,827	61
HOME/STAR TOTAL	$256,991	2	$1,178,172	9	$1,000,000	8	$537,623	5
ALL SPECIAL NEEDS FUNDINGS	$7,926,395	248	$9,555,418	325	$8,400,000	265	$2,796,450	66

Lead Poisoning Prevention Commission

History and Charge

The Lead Poisoning Prevention Commission was created by statute in 1994 (Chapter 114, Acts of 1994). The Commission studies and collects information on the effectiveness of the Lead Poisoning Prevention Program and current risk reduction treatments in reducing exposure to lead as well as risk and liability issues including availability of insurance. (Environment Article, Secs. 6-801, 6-848)

Award or Recognition

1. Outstanding Child Health/Environmental Advocate Award

2. Outstanding Advocate

3. Special Recognition Award

Rubric or criteria to align with mission and goals: See above and could add:

a. Demonstrates effective advocacy and education for public good
b. Shared Vision of No safe blood level
c. Prevention is key to success

Nomination process discussed:

a. Commissioners recommendations
b. Must be submitted in written format and be received by first Thursday in August annually
c. Vote with majority rule by first Thursday in September annually
d. Chair contacts recipient by September 30th annually
e. Presentation during National Lead Poisoning Prevention Week annually
f. Share via media – ideas

Categories for Recipients:

a. Local Health Departments (Excellence in screening, lead poisoning prevention and lead case management efforts, also education to the public)
b. Child Care Providers (excellence in lead poisoning efforts, including outreach and education to parents)
c. Health Care Practitioners (high PbH screening rates, excellence in lead poisoning prevention efforts, including outreach and education to parents)
d. Public (businesses, individuals, agencies) (efforts over long period of time supporting lead poisoning prevention in any area including screening, housing, health care, legislation, advocacy)