

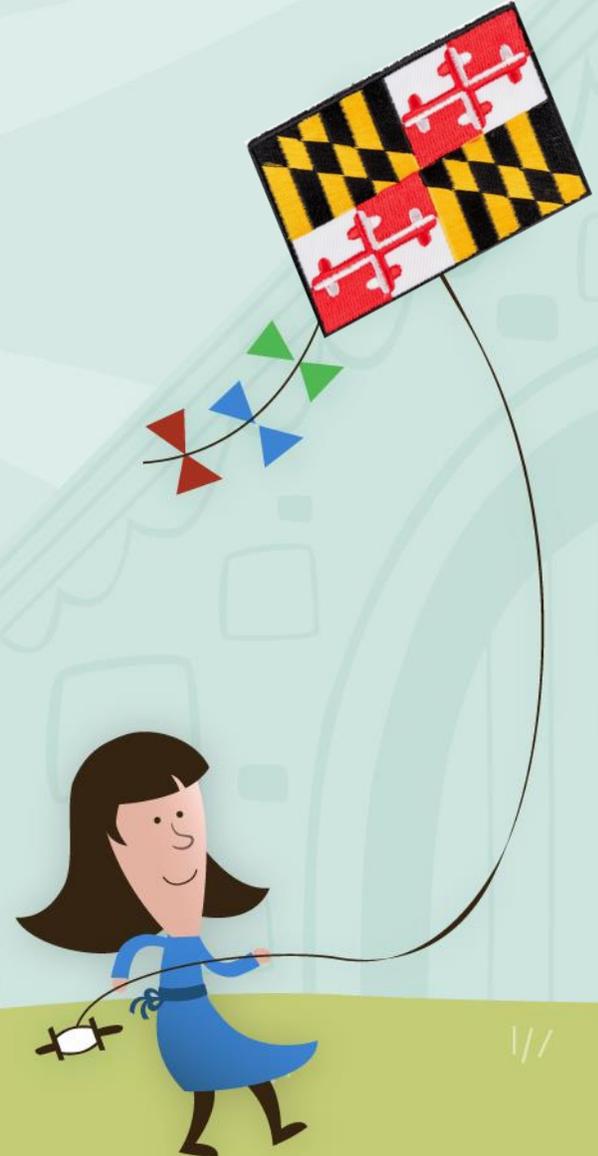
# Lead Poisoning Toolkit 2022

## *Guidelines For Maryland Practitioners*

**Maryland Chapter** American Academy of Pediatrics

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# Organization of Presentation

	Slides
Introduction	4,5
History of lead poisoning in Maryland	6
Exposure to lead hazards	7,8
Toxicological profile for lead	9-15
Screening for lead poisoning	16-18
Testing for lead poisoning	19-21
Management guidelines	22-27
Environmental investigation	28-30
Preventing lead poisoning	31,32
Resources	34



# Key Points

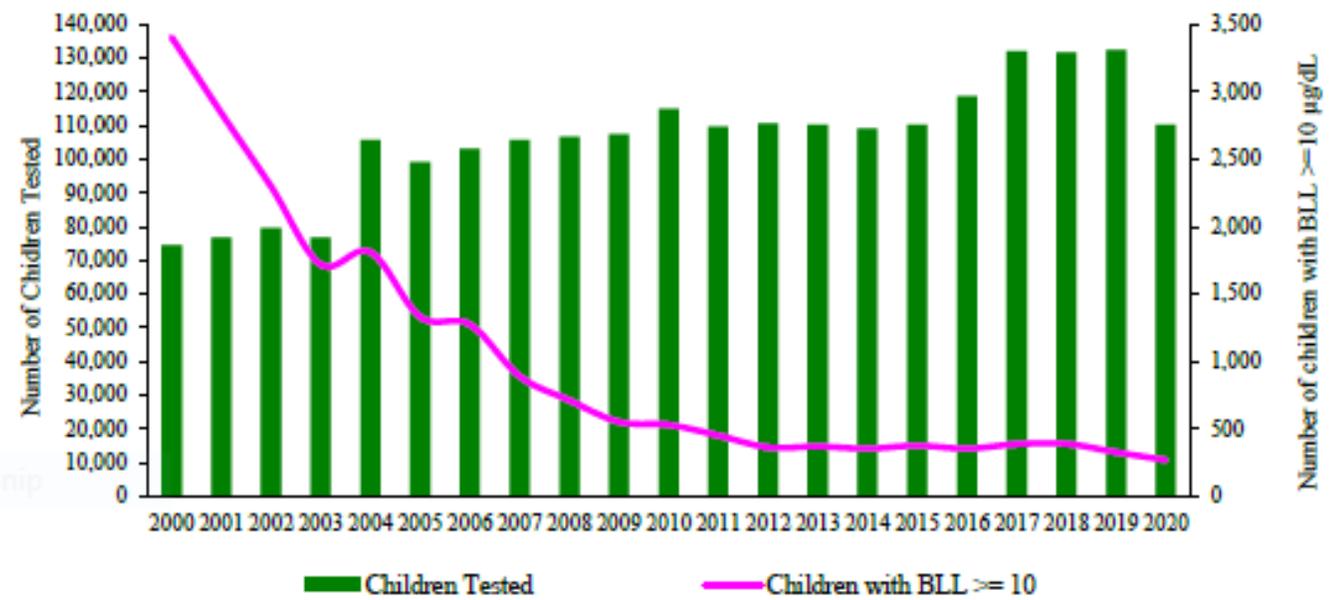
- **There is no safe blood lead level**
- **The sources for most cases of lead poisoning today are lead contaminated dust and deteriorated paint**
- **Low-income and minority families are disproportionately affected by lead poisoning**
- **Preventing exposure (primary prevention) is the most effective way to protect children from lead poisoning**



# 1. Introduction: . . .still treating lead poisoning after all these years

## A. Good News: Dramatic reduction in prevalence and incidence of Maryland children with elevated Blood Lead levels (BLL)

Figure One: Number of Children 0-72 Months Tested for Lead and Number Reported to Have Blood Lead Level 10 g/dL: 2000-2020



- In 2000, 3,402 children had a BLL  $\geq 10$   $\mu\text{g}/\text{dL}$  out of 75,000 tests (4.6%).
- By 2019, this number decreased to 328 of 130,000 tested (0.2252%).
- 1.1% of children tested in 2020 had blood lead tests  $\geq 5$   $\mu\text{g}/\text{dL}$  which was a decrease of 1.2% in 2019.



\*From Maryland Department of the Environment annual report, October 2020:  
<https://mde.maryland.gov/programs/land/leadpoisoningprevention/pages/healthcare.aspx>



# Introduction: However.....

## B. **Bad News:** Lead poisoning still major problem

- Lead exposure still represents the most significant environmental concern for young children in Maryland.
- In 2020 923, Maryland children had elevated BLL  $\geq 5$   $\mu\text{g/dL}$  that can cause neuropsychological impairments, learning problems, and behavior disorders.
- There was a 16.7% decrease in blood lead testing in 2020 compared to 2019 related to COVID-19.





Dr. J. Chisolm introduced chelating agents to treat lead poisoning as well as the fingerstick blood test.

**LEAD POISONING IN CHILDREN WITH ESPECIAL REFERENCE  
TO LEAD AS A CAUSE OF CONVULSIONS.<sup>1</sup>**

**BY KENNETH D. BLACKFAN, M.D.,  
BALTIMORE, MARYLAND.**

We are indebted to the Australian writers Gibson, Love, Turner, Breinl and Young and others for much of the recent literature regarding lead poisoning in children. They have had an unusually good opportunity to study this condition.

First article published about a case of child with lead poisoning



## **2. Maryland's Historical Contributions to Eliminate the Lead Poisoning Epidemic**

# 3. Exposure to Lead Hazards in Maryland



**a. Deteriorated lead-based paint and lead contaminated-house dust remain the most frequent source of lead poisoning in Maryland children\*.**

b. Houses built before 1978 are considered to have lead-based paint till proven otherwise.

c. Remodeling in a house built before 1978 may release large amounts of lead-contaminated house dust.

**d. Low-income families more likely to be renting properties at risk for lead hazards.**

d. Sources of information about the year a house was built:

i. MD Department of Assessments and Taxation:  
<https://sdat.dat.maryland.gov/RealProperty/Pages/default.aspx>

ii. Zillow: <https://www.zillow.com/md/>



\*From Maryland Department of the Environment annual report, October 2020.





**Imported painted toys**



**Kohl-imported cosmetics**



**Imported spices, especially turmeric**



**Parent occupation/hobby: e.g. lead dust firearm range**



**Children recently arrived in MD**

## **Additional lead hazards\***



\*See IIS Consumer Product Safety Commission for recent recalls:

# Toxicokinetics: **Absorption** and Distribution of Lead in the Body\*

## Exposure pathway

- Most commonly, lead-contaminated house dust is transferred into a child's body by hand to mouth activity
- Young children with pica are at greatest risk for lead ingestion
- Pregnant women with current or previous lead poisoning history can transmit lead to the fetus by trans-placental route



## Absorption by GI tract

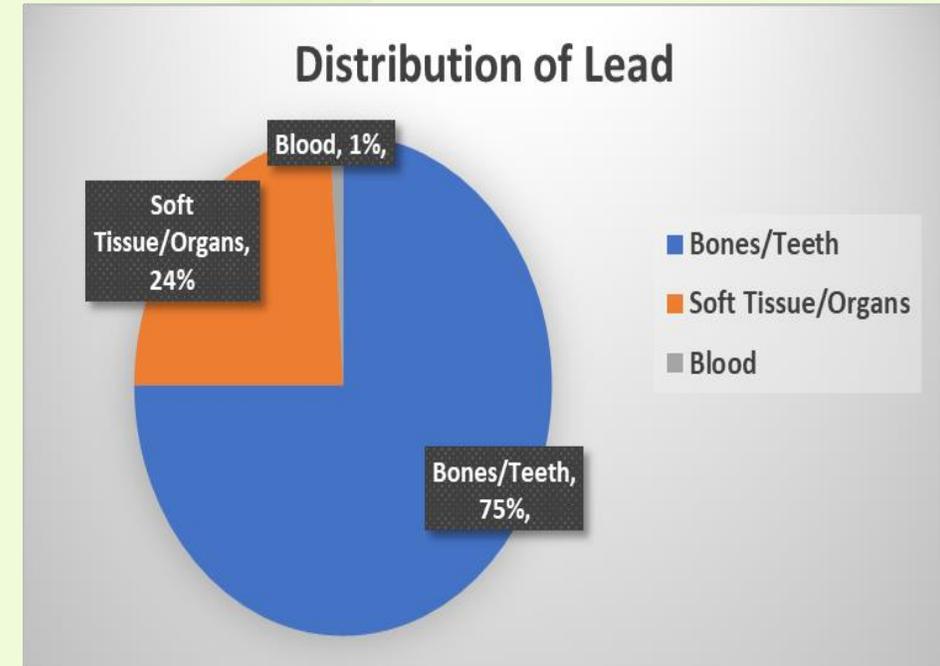
- The percent of lead absorbed by young child is 50% (100% on an empty stomach) compared to 10% in an adult.
- Lead absorption is enhanced by high fat diet, smaller particulate size, and deficiencies in Iron, Calcium, and Zinc



\*EPA ISA 2013: <https://www.epa.gov/isa/integrated-science-assessment-isa-lead>

# Toxicokinetics: Absorption and **Distribution** of Lead in the Body\*

1. **Bones and teeth**
  - a. The half-life of lead in bones is up to 20 years.
  - b. Release of lead back to the blood is increased in stress, pregnancy, and chronic disease.
2. **Soft tissue( brain, liver, kidneys)**
  - a. Brain is target organ
  - b. The half-life of lead in the brain is up to 2 years
3. **Blood**
  - a. The half-life lead in blood after acute ingestion is ~30 days and up to a year with chronic elevated BLL
  - b. An elevated blood lead level measures recent absorption as well as lead released from bones from previous absorption

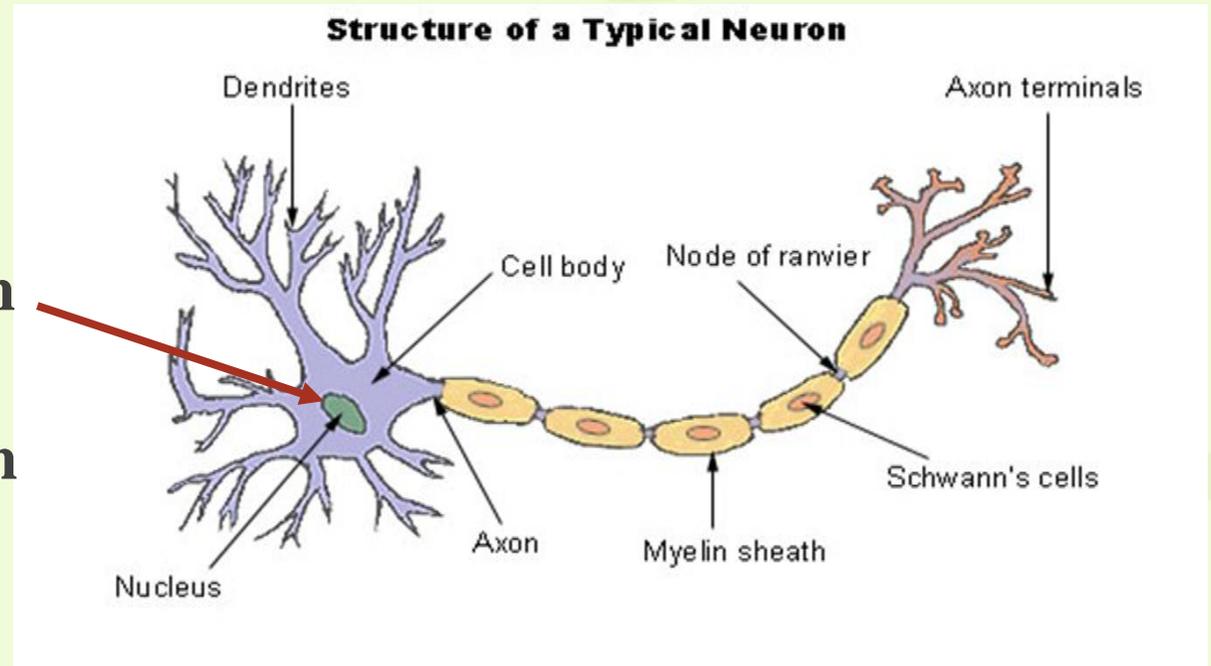


\*EPA ISA 2013: <https://www.epa.gov/isa/integrated-science-assessment-isa-lead>



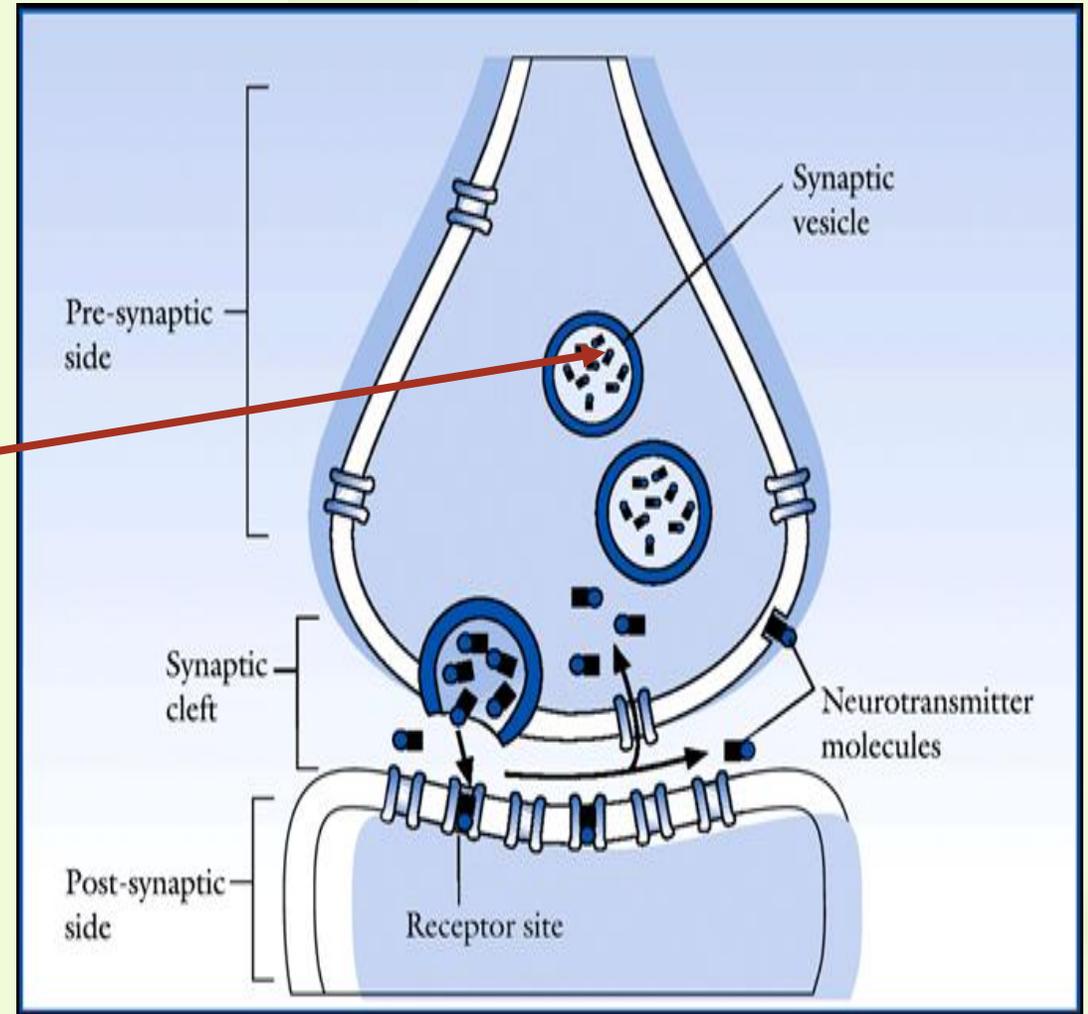
# Neurotoxic Effects of Lead Poisoning: Neuron

- Child's developing brain more sensitive to injury from lead poisoning
- Lead interferes with Calcium metabolism in the neuron resulting in its impaired function or death
- Lead impairs formation of the myelin sheath resulting in diminished neurotransmission.



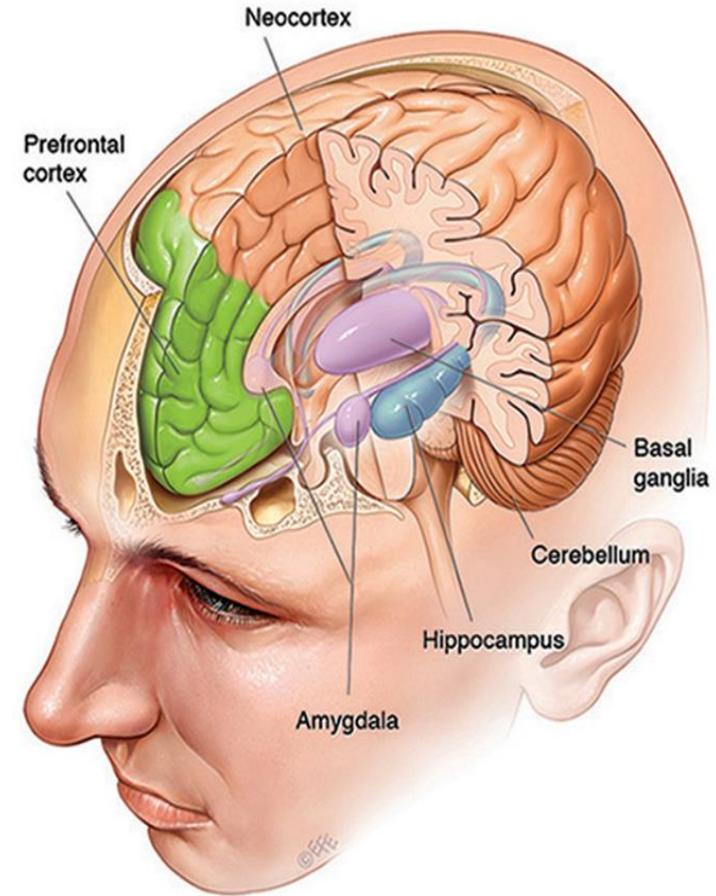
# Neurotoxic Effects of Lead Poisoning: Synapse

- **Malformation of synapse**
- **Lead interferes with the normal pruning process that eliminates inefficient synapses**
- **Lead causes inhibition of presynaptic vesicular release which contributes to deficits in synaptic plasticity and intellectual development.**



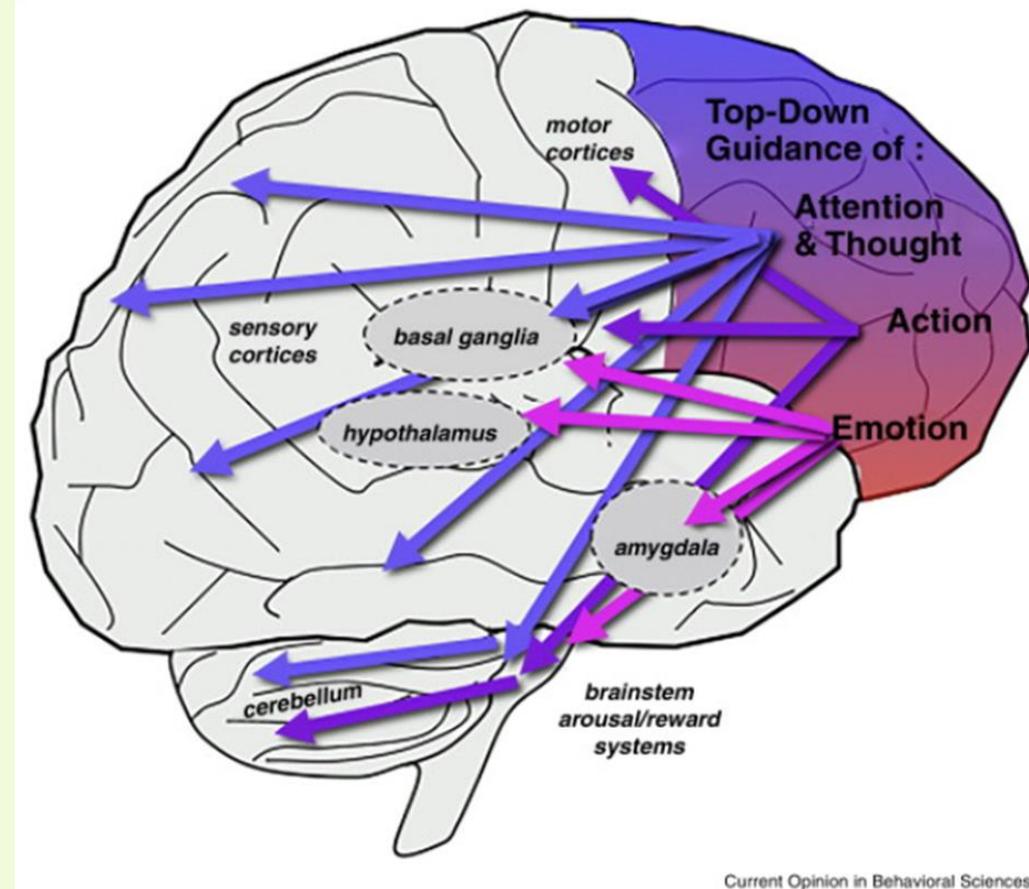
# Neurotoxic Effects of Lead Poisoning: Neuropsychological Impairment

- **Hippocampus:** associated long-term memory
- **Amygdala:** associated with emotions
- **Pre-frontal Cortex:** executive functions
- **Neocortex:** higher functions such as conscious thought and language.
- **Basal Ganglia:** motor control
- **Cerebellum:** coordinates motor movement



# Neurotoxic Effects of Lead Poisoning: the Neuropsychological Deficits in Children\*

- **Cognition:** dose dependent decrease in IQ points
- **Executive function:** Impulse control, Emotional Control, Self-Monitoring, Planning and Prioritizing, Task Initiation, and Organization
- **Distractibility:** short attention span, hyperactivity, distractible
- **Academic progress:** reading problems, higher absenteeism rates, behind grade level
- **Memory:** decreased verbal and visual memory
- **Affect:** increase in oppositional, aggressive, and anti-social behaviors
- **Language:** impaired verbal concept formation; poor grammatical reasoning
- **Processing speed:** slowed decision-making abilities and reaction times



\*Mason, L. *Pb Neurotoxicity: Neuropsychological effects lead toxicity*. BioMed Research International. Volume 2014, Article ID 840547, 1-8 .Jan 2, 2014.



# The Effects of a History of Childhood Lead Poisoning on Adults

1. Further loss of IQ points\*
2. Early-onset dementia
3. Decrease vocational opportunities and reduced lifetime income
4. Anxiety and depression
5. Downward social mobility
6. Medical conditions
  - a. Hypertension
  - b. Coronary artery disease
  - c. Impaired male and female reproductive function
  - d. Cancer



\*Reuben, A. Association of childhood blood-lead levels with cognitive function and socioeconomic status at 38 years and IQ change and socioeconomic mobility between childhood and adulthood. JAMA. 2017 March 28; 317(12): 1244-1251  
#EPA ISA 2013



# Screening for Lead Poisoning: Identifying Children at Risk\*

- Perform Lead Risk Assessment Questionnaire
- Clinical assessment, including health history, developmental screening and physical exam
- Evaluate nutrition and consider iron deficiency
- Educate parent/guardian about lead hazards



\*<https://phpa.health.maryland.gov/OEHFP/EH/Pages/Lead.aspx>



# Screening for Lead Poisoning: Identifying Children at Risk by ZIP Code and County\*

## 2004 Maryland Childhood Lead Poisoning Targeting Plan At Risk Areas by ZIP Code

<b>Allegany County</b>	21133	21244	<b>Dorchester County</b>	21798	21661	20722	20913	20674
	21155	21250		<b>Garrett County</b>	21667	20731	<b>Queen Anne's County</b>	20687
ALL	21161	21251	ALL	ALL	<b>Montgomery County</b>	20737	<b>Talbot County</b>	
<b>Anne Arundel County</b>	21204	21282	<b>Frederick County</b>	<b>Harford County</b>	20738	20738	21607	21612
	21206	21286		21001	20783	20740	21617	21654
20711	21207	<b>Baltimore City</b>	20842	21010	20787	20741	21620	21657
20714	21208	ALL	21701	21034	20812	20742	21623	21665
20764	21209	<b>Calvert County</b>	21703	21040	20815	20743	21628	21671
20779	21210	20615	21704	21078	20816	20748	21640	21673
21060	21212	20714	21716	21082	20818	20752	21644	21676
21061	21215	<b>Caroline County</b>	21718	21085	20838	20770	21649	<b>Washington County</b>
21225	21219	ALL	21719	21130	20842	20781	21651	
21226	21220	<b>Carroll County</b>	21727	21111	20868	20782	21657	ALL
21402	21221	21155	21757	21160	20877	20783	21668	<b>Wicomico County</b>
<b>Baltimore County</b>	21222	21757	21758	21161	20901	20784	21670	
	21224	21787	21762	<b>Howard County</b>	20910	20785	<b>Somerset County</b>	ALL
21027	21227	21791	21769	20763	20912	20787	<b>Worcester County</b>	
21052	21228	<b>Cecil County</b>	21776	<b>Kent County</b>	20913	20788	ALL	
21071	21229	21913	21778	21610	<b>Prince George's County</b>	20790	<b>St. Mary's County</b>	ALL
21082	21234	<b>Charles County</b>	21780	21620		20791		
21085	21236	20640	21783	21645	20703	20792	20606	
21093	21237	20658	21787	21650	20710	20799	20626	
21111	21239	20662	21791	21651	20712	20912	20628	

<https://phpa.health.maryland.gov/OEHFP/EH/Pages/Lead.aspx>



# Screening for Lead Poisoning: Lead Risk Assessment Questionnaire\*

1. Lives in or regularly visits a house/building built before 1978 with peeling or chipping paint, recent/ongoing renovation or remodeling?
2. Ever lived outside the United States or recently arrived from a foreign country?
3. Sibling, housemate/playmate being followed or treated for lead poisoning?
4. If born before 1/1/2015, lives in a 2004 “at risk” zip code?
5. Frequently puts things in his/her mouth such as toys, jewelry, or keys, eats non-food items (pica)?
6. Contact with an adult whose job or hobby involves exposure to lead?
7. Lives near an active lead smelter, battery recycling plant, other lead-related industry, or road where soil and dust may be contaminated with lead?
8. Uses products from other countries such as health remedies, spices, or food, or store or serve food in leaded crystal, glazed pottery or pewter?



\*<https://phpa.health.maryland.gov/OEHFP/EH/Pages/Lead.aspx>



# Testing for Lead Poisoning: Indications\*

1. All children born on or after 1/1/2015 tested at 12 and 24 months (Effective 3/28/2016)
2. For children born before 1/1/2015 follow targeted testing guidelines
2. Parental/guardian request
3. 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.
4. Follow-up testing on a previously elevated Blood Lead Level
5. 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.

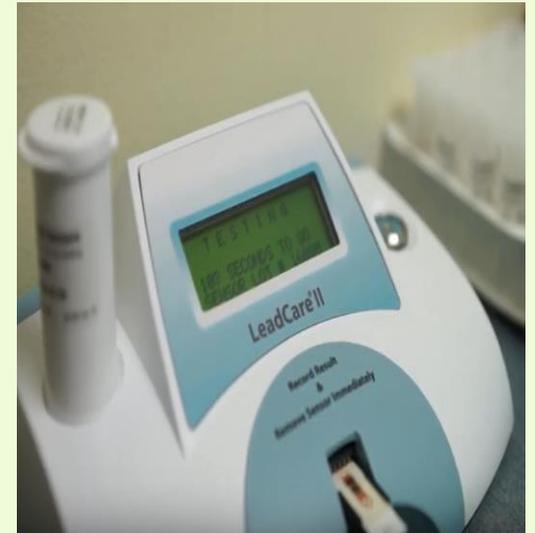


\*<https://phpa.health.maryland.gov/OEHFP/EH/Pages/Lead.aspx>



# Recall of Megellan Blood Lead Testing Kits

1. The U. S. Food and Drug Administration (FDA) issued in October 2021 a recall of LeadCare Blood Lead Tests Kits due to significant risk of falsely low results.
2. Discontinue use of the recalled test kits is recommended till further notice – see <https://www.magellandx.com/resources/leadcare-test-kit-controls-out-of-range-low-coor-lo-recall/> for lot numbers recalled
3. Retest children who tested below 5 µg/dL with the recalled LeadCare test kits with a venous sample.
4. Direct questions about the recall or retesting children to Maryland Department of Environment: Dr. Rena Boss-Victoria at 410-537-3880 or [rena.boss-victoria@maryland.gov](mailto:rena.boss-victoria@maryland.gov)) or MDH (toll-free 1-866-703-3266 or [mdh.envhealth@maryland.gov](mailto:mdh.envhealth@maryland.gov)).
5. For further information, contact Magellan’s LeadCare Product Support Team at 1-800-275-0102, or by email at [LeadCareSupport@magellandx.com](mailto:LeadCareSupport@magellandx.com)



# Blood Testing Laboratory Reporting Requirement\*

## **Blood Lead Laboratory Reporting Requirement as of July 1, 2020**

The amended law and regulations\* of 2020 require that the following information be included in the lab report:

**1. Child information:**

Name (last name, first name, middle initial)  
Date of birth  
Gender  
Race  
Ethnicity  
Address: complete street address with apartment number (if applicable), city/town, state, zip code, county  
Country of birth  
Pregnancy status at the time test (if applicable)  
Parent/Guardian name (last name, first name)  
Parent/Guardian Address (if different from the child address)  
Telephone number  
Medical assistance number if enrolled in Medicaid or the Maryland Children's Health Program

### **2: Test information**

Date specimen was drawn  
Type of specimen  
Blood lead level (in microgram per deciliter "µg/dL" with up to two decimal points) with the applicable comparator.  
The date the test was done (analyzed)  
Method of measurement  
The method of measurement detection limit  
The date the result was reported/sent to the state

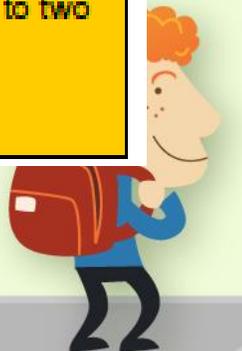
### **3: Provider/Submitter information:**

Name (last name, first name)  
National provider identifier (NPI)  
Office address  
Office telephone number  
Office fax number  
Contact person (if applicable)

### **4: Laboratory information:**

Name of the establishment  
Clinical laboratory improvement amendment (CLIA) number  
Address  
Telephone number  
Fax number  
Contact person (name, telephone number)  
\*\* Any blood lead test with a blood lead level  $\geq 5.00$  µg/dL should be reported to the state within 24 hours after the test is finalized. All other results can be reported up to two (2) weeks after the test is finalized.

\* From Maryland Department of the Environment annual report, October 2020:  
<https://mde.maryland.gov/programs/land/leadpoisoningprevention/pages/healthcare.aspx>



# Clinical Guidelines on New CDC Blood Lead Reference Level\*

- **The CDC announced October 28, 2021, that it was updating its blood lead reference value from  $\geq 5$   $\mu\text{g}/\text{dL}$  to  $\geq 3.5$   $\mu\text{g}/\text{dL}$ .**
- **Currently the legal definition of elevated blood lead level in Maryland remains at  $\geq 5$   $\mu\text{g}/\text{dL}$  and the Maryland Department of the Environment continues to conduct environmental investigations for those children.**
- **Providers need to follow-up on children with blood lead levels of 3.5 – 4.9  $\mu\text{g}/\text{dL}$  to ensure that the child's blood lead levels are not increasing, indicating ongoing exposure.**



\* Letter to Maryland providers January 21, 2022, from Dr. Cliff Mitchell, Director Environmental Health Bureau, Maryland Department of Health



# CDC's New Recommended Actions Based on Blood Lead Level \*

## Patient's venous BLL is $< 3.5 \mu\text{g/dL}$

- Provide education about common sources of lead exposure and information on how to prevent further exposure.
- During well-child visits, check development to make sure age-appropriate milestones are being met.
- During well-child visits, discuss diet and nutrition with a focus on iron and calcium intake.
- Conduct follow-up blood lead testing at recommended intervals based on the child's age.

## Schedule for Follow-Up Blood Lead Testing

Venous blood lead levels ( $\mu\text{g/dL}$ )	Early follow up testing (2–4 tests after initial test above specific venous BLLs)	Later follow up testing after BLL declining
$\geq 3.5$ –9	3 months*	6–9 months
10–19	1–3 months*	3–6 months
20–44	2 weeks–1 month	1–3 months
$\geq 45$	As soon as possible	As soon as possible

\*Adopted from <https://www.cdc.gov/nceh/lead/advisory/acclpp/actions-blls.htm> posted on-line March 15, 2022



# CDC's New Recommended Actions Based on Blood Lead Level

## Patient's BLL is 3.5–19 µg/dL

- Follow the recommendations above for BLL < 3.5 µg/dL.
- Report the test result to your state or local health department.
- Obtain an environmental exposure history to identify potential sources of lead.
- Arrange for an environmental investigation of the home to identify potential sources of lead, as required.
- Ensure the child does not have iron deficiency using testing and treatment. Follow guidelines from the American Academy of Pediatrics (AAP)
- Discuss the child's diet and nutrition with a focus on calcium and iron intake. Refer caregivers to supportive services, as needed (e.g., Special Supplemental Nutrition Program for Women, Infants and Children).
- Check the child's development to ensure appropriate milestones are being met per AAP guidelines.
- Refer caregivers to supportive services, as needed (e.g., developmental specialists, Early Intervention Program).
- Provide follow-up BLL testing at recommended intervals.



# CDC Recommended Actions Based on Blood Lead Level

Patient's BLL is 20–44  $\mu\text{g}/\text{dL}$

- Follow the recommendations above for BLL is 3.5–19  $\mu\text{g}/\text{dL}$ .
- Perform a complete history and physical exam, assessing the child for signs and symptoms related to lead exposure.
- Arrange for or refer the family for an environmental investigation of the home and a lead hazard reduction program.
- Consider performing an abdominal X-ray to check for lead-based paint chips and other radiopaque foreign bodies. This is important for young children who tend to swallow or eat non-food items. Children may also put their mouths on surfaces that could be covered with lead dust. Initiate bowel decontamination if indicated.
- Contact a Pediatric Environmental Health Specialist for further guidance (see list)



# CDC Recommended Actions Based on Blood Lead Level

Patient's BLL is  $\geq 45$   $\mu\text{g}/\text{dL}$

- Follow recommendations for BLL 20–44  $\mu\text{g}/\text{dL}$ .
- Perform a complete history and physical exam including a detailed neurological exam.
- Perform an abdominal X-ray and, if needed, initiate bowel decontamination.
- If the patient exhibits signs or symptoms of lead poisoning, including, confusion, weakness, seizures, coma, nausea, vomiting, and abdominal pain, admit them to a hospital as soon as possible.
- Consider admitting the patient to a hospital if one of these conditions exists:
  - The patient's home is not lead-safe, and they are unable to find a lead-free living space.
  - The source of lead exposure has not been identified, and the potential for further lead exposure is still possible.
- Consult a medical toxicologist or pediatrician with experience in treating lead poisoning to initiate:
  - Gastrointestinal decontamination (removal of swallowed lead using laxatives) or
  - Chelation therapy (a treatment that uses a medication to remove lead from the body when BLLs are very high).



# Reference Articles on Treating Children With Lead Poisoning

1. AAP Policy Statement 2016: Prevention of Childhood Lead Toxicity  
<https://publications.aap.org/pediatrics/article/138/1/e20161493/52600/Prevention-of-Childhood-Lead-Toxicity>
2. American Family Physician 2015: Lead Poisoning  
<https://pubmed.ncbi.nlm.nih.gov/31259498/>
3. Pediatric Review: Lead Poisoning: An Update 2021  
<https://pubmed.ncbi.nlm.nih.gov/34074717/>
4. Clinical Pediatrics 2018: Lead Poisoning and Children in Foster Care: Diagnosis and Management Challenges  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6982421/>
5. Agency for Toxic Substances and Disease Registry 2019 Case Study: How Should Patients Exposed to Lead Be Treated and Managed?  
[https://www.atsdr.cdc.gov/csem/leadtoxicity/patient\\_treatment.html](https://www.atsdr.cdc.gov/csem/leadtoxicity/patient_treatment.html)
6. Clinical Pediatrics 2019: Children With Autism Spectrum Disorder and Lead Poisoning: Diagnostic Challenges and Management Complexities  
<https://pubmed.ncbi.nlm.nih.gov/30938166/>
7. Clinical Pediatric Emergency Medicine 2017: An Update on Childhood Lead Poisoning  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5645046/>



# Environmental Investigation of Child with Elevated BLL\*

## Definitions:

1. An environmental investigation of property that houses a child with an elevated BLL is a more extensive assessment of all possible lead hazards in dust, lead-based paint, exposed soil, water, and other possible media (ex.: imported toys, furniture, or glazed cookware) in child's home as well as places the child frequently visits.
2. Lead hazard screen is a limited assessment of lead hazards performed in accordance with the methods and standards made by the state or EPA, as appropriate. A lead hazard screen may identify the need for a follow-up risk assessment.

**X-Ray Fluorescence (XRF) Handheld Analyzer** uses an X-ray stream emitted to detect the presence of lead-based paint



Lead dust clearance testing is usually done after renovation, repair, painting, and cleaning activities are finished in a property where children are assumed to spend time.



\*HUD Guidelines: [https://www.hud.gov/program\\_offices/healthy\\_homes/lbp/hudguidelines](https://www.hud.gov/program_offices/healthy_homes/lbp/hudguidelines)



# Environmental Investigation of Child with Elevated BLL



## New Lead Dust Hazard Action Levels:

Floors:  $\geq 10 \mu\text{g}/\text{ft}^2$

Window Sills:  $\geq 100 \mu\text{g}/\text{ft}^2$

## New Lead Clearance Action Levels:

Interior Floors:  $< 10 \mu\text{g}/\text{ft}^2$

Porch Floors:  $< 40 \mu\text{g}/\text{ft}^2$

Window Sills:  $< 100 \mu\text{g}/\text{ft}^2$

Window Troughs:  $< 100 \mu\text{g}/\text{ft}^2$

<https://www.hud.gov/sites/documents/LEADDUSTCLEARANCE.PDF>



# Environmental Investigation of Child with Elevated BLL

Maryland Standards for Lead in House Paint, House Dust, Soil, Water, and Candy

Source	Standard For Action	Comment
Lead-based paint (XRF)	$\geq 0.7 \text{ mg/cm}^2$	National standard $1.0 \text{ }\mu\text{g/dL}$
Paint containing lead	$> 90 \text{ ppm by weight}$	parts per million
Dust floor-screening	$25 \text{ }\mu\text{g/ft}^2$	
Interior windowsill	$125 \text{ }\mu\text{g/ft}^2$	
Bare soil children's playground area	$200 \text{ }\mu\text{g/g}$	Effective July 1, 2020
Drinking water	$15 \text{ ppb}$ (parts per billion)	In $> 10\%$ of a drinking water systems' tap samples
Candy	$0.1 \text{ ppb}$	



# Managing Child With Lead Poisoning

1. Identify source(s) of lead hazards-visiting properties, Do It Yourself (DIY) remodeling in older house, daycare
2. Periodic formal assessment for academic and/or behavior problems
3. Neuropsychological testing to identify impairments that affect learning-IQ tests do not accurately indicate academic potential
4. Assess for problems with social judgement and impulse control that lead to problematic behavior Intervene with neuropsychological evaluation
5. When indicated, 504 plan, IEP, and counseling



# Preventing Childhood Lead Poisoning

**“Primary prevention, reducing or eliminating the myriad sources of lead in the environment of children before exposure occurs, is the most reliable and cost-effective measure to protect children from lead toxicity.”\***

- Follow Maryland guidelines for screening children and pregnant women.
- Recommend environmental assessment of older homes built before 1960 especially if there has been recent repair or renovation work.
- Educate parents about lead hazards
- Make sure children eat healthy diets with adequate iron and calcium to help minimize absorption when exposed to lead hazards
- Inquire about where children visit or go for daycare to make sure those properties are lead-safe



\*AAP policy Statement June 26, 2016: <https://pediatrics.aappublications.org/content/138/1/e20161493>



# Preventing Childhood Lead Poisoning: Educate Parents\*

## Childhood Lead Exposure

Amid growing evidence that even low levels of lead exposure can cause long-term damage to children's development, the American Academy of Pediatrics urges stronger federal action to eliminate exposure.



### Common sources of lead in the home:

- Dust
- Soil
- Water in lead pipes
- Toys
- Nutritional supplements
- Dishware
- Fishing sinkers
- Bullets
- Residue from parent occupations
- Paint/hobby materials

**37 million**

Estimated number of housing units in United States that contain lead-based paint

U.S. housing built from 1940-1959: **39 percent**



U.S. housing built from 1960-1977: **11 percent**

U.S. housing built from 1978-1998: **3 percent**

**None**

Level of lead exposure considered safe for children

**\$50 billion**

Annual cost of childhood lead exposure in the United States

**\$17 to \$221**

Money saved for every \$1 invested to reduce lead hazards in U.S. housing

**535,000**

Estimated number of U.S. preschool children with blood lead levels high enough to call for medical management (more than 5 ug/dl)

**23 million**

Estimated total loss of IQ points among U.S. children today from lead toxicity

**1 in 5**

Attention Deficit Hyperactivity Disorder cases attributed to lead exposure

\*<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/lead-exposure/Pages/default.aspx>



American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



# Summary-Key Points

There is no safe blood lead level

The sources today for most cases of lead poisoning are lead-contaminated dust and deteriorated paint

Low-income and minority families are disproportionately affected by lead poisoning

Primary prevention, preventing exposure most effective way to protect children from lead poisoning



# Resources

## Mid-Atlantic Center for Children's Health & the Environment

Pediatric Environmental Health Specialty Unit

866-622-2431

kidsandenvironment@georgetown.edu

[www.pehsu.net/region3.html](http://www.pehsu.net/region3.html)

## Mt. Washington Pediatric Hospital Lead Treatment Program

410-367-2222

[www.mwph.org](http://www.mwph.org)

## Maryland Poison Control

800-222-1222

## Maryland Department of Health (MDH)

(410) 767-6500 or 1-877-463-3464

[dhmvh.envhealth@maryland.gov](mailto:dhmvh.envhealth@maryland.gov)

<http://phpa.dhmvh.maryland.gov/OEHFP/EH/Pages/Lead.aspx>

## Maryland Department of the Environment

Lead Poisoning Prevention Program

410-537-3825/800-776-2706

<http://www.mde.state.md.us/programs/Land/LeadPoisoningPrevention/Pages/index.aspx>

## Local Health Departments' Websites

<https://health.maryland.gov/Pages/departments.ASPX>

## Centers for Disease Control and Prevention

[www.cdc.gov/nceh/lead/](http://www.cdc.gov/nceh/lead/)

## Green & Healthy Homes Initiative

410-534-6447

800-370-5223

[www.greenandhealthyhomes.org/](http://www.greenandhealthyhomes.org/)



## MDH Best Practices For Lead Poisoning Prevention And Treatment Videos

### 1. Parent:

<https://www.youtube.com/watch?v=B1ycx4DtPfY&feature=youtu.be>

### 2. Providers:

<https://www.youtube.com/watch?v=aJ6QGcBB0Nc&feature=youtu.be>

