CHILDHOOD LEAD POISONING AND PREVENTION

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Maine Center for Disease Control and Prevention

Presentation for CYSHCN

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What is Lead?

- Lead is a metal that has had numerous uses since preindustrial times.
- Unlike some other metals, lead plays no role in human metabolism.
- In recent years, researchers have come to understand, there is no safe level of lead in the human body.
- Lead poisoning remains a top environmental threat to young children.
- Goal of Healthy People 2030: Eliminate all childhood lead poisoning

Sources of Persistent Lead in our Environment

- Lead in residential paint
  - Phased out from 1950-1978
- Lead in gasoline
  - Phased out by 1986
- Lead in connecting pipes
  - Phased out from 1920's to 1980's
- Lead solder in plumbing
  - Banned in 1986

Lead Dust Comes From Old Lead Paint

Chipping, peeling, flaking, disturbed paint can create lead dust.

- Normal wear and tear
- Weathering
- Water damage
- Sanding or scraping during repairs or renovation

Lead dust is the #1 source of lead poisoning in Maine

Other Sources of Lead Exposure

- Soil
- Occupational take-home lead
- Hobbies
- Antiques

Non- Housing Sources of Lead Exposure

- Fishing weights
- Pot and Pans
- Jewelry
- Glazed pottery
- Herbs
- Religious powders
- Ethnic Medicines
- Spices
- Toys
- Cosmetics

How does Lead Poisoning Happen?

Dust from Old Lead Paint!

- Settles on floors
- Settles on window-sills
- Just takes a little bit to cause lead poisoning

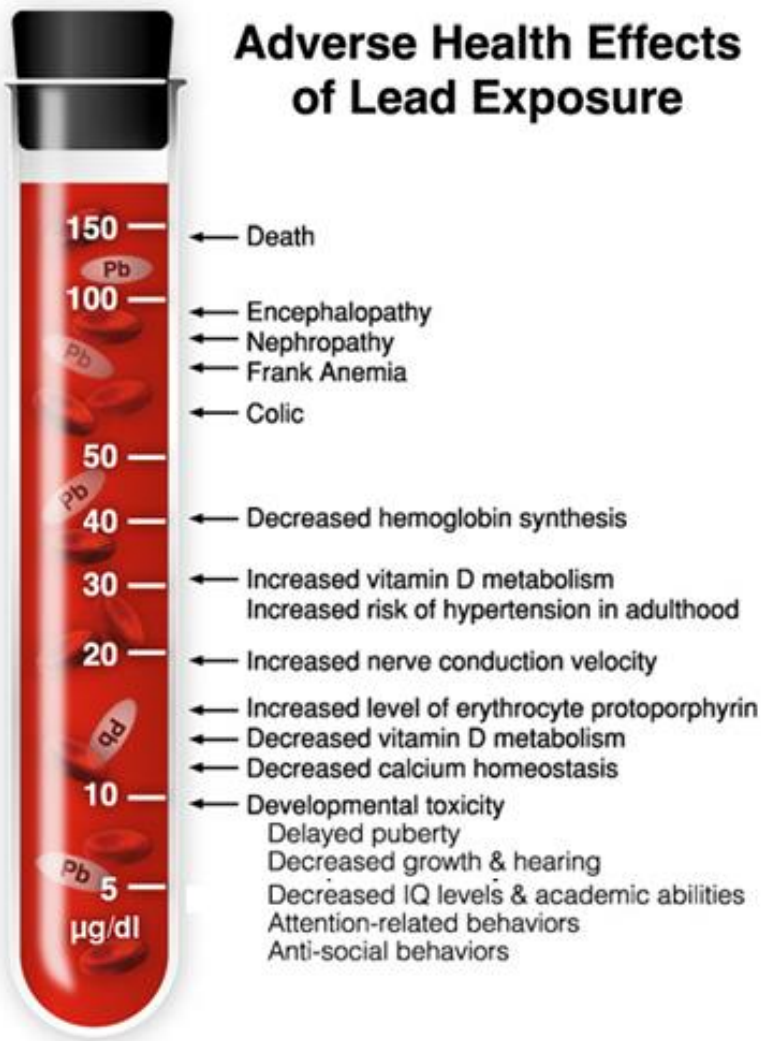
- Children, especially 1- and 2-year-olds are:
  - Crawling, cruising & walking
  - Spending time on the floor
  - Discovering with their hands and mouths
  - Rapidly developing brains
  - Breathing zone closer to ground
  - Rely on others for safety and supervision
  - Food/ pacifiers on floor
  - Curiosity

Symptoms of Lead Toxicity in Children

- Most lead -poisoned children are asymptomatic
- Symptoms may be subtle and go unnoticed until blood lead levels reach 40µg/dL or higher
- Nonspecific complaints, if present can include:
  - Irritability
  - Fatigue
  - Loss of appetite
  - Abdominal pain

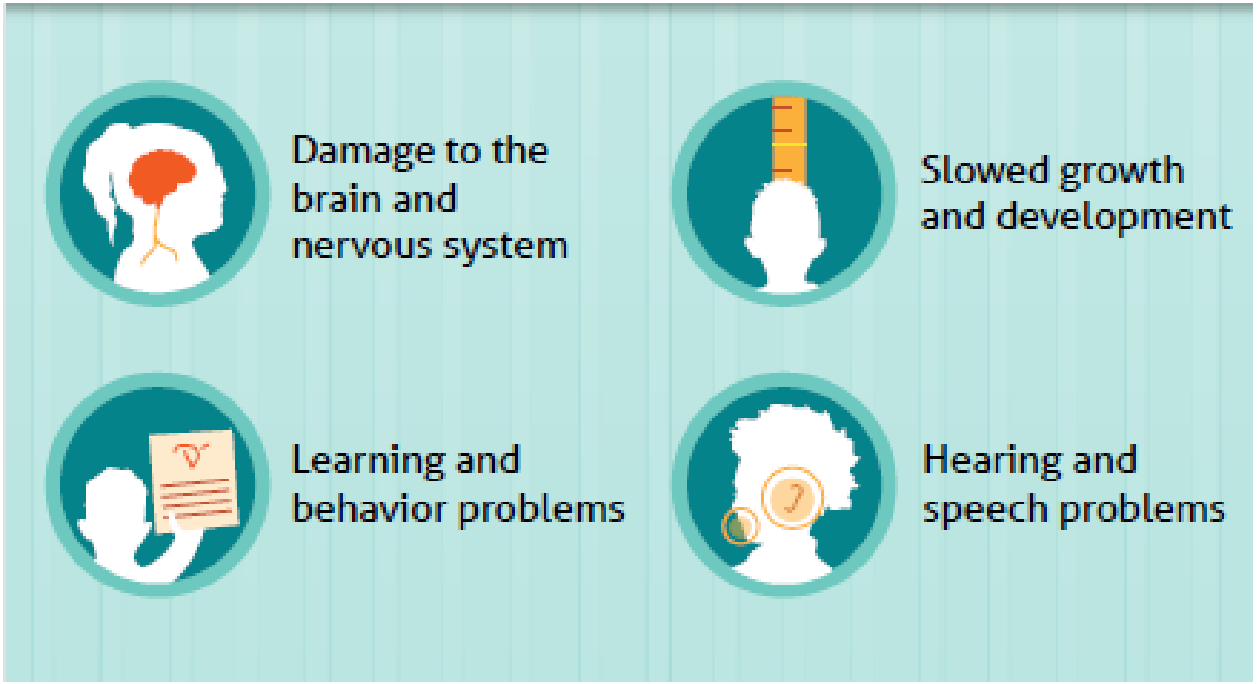
Adverse Health Effects of Lead Exposure

At higher levels of lead, children are at risk for additional health effects of lead, including seizures, coma and death.



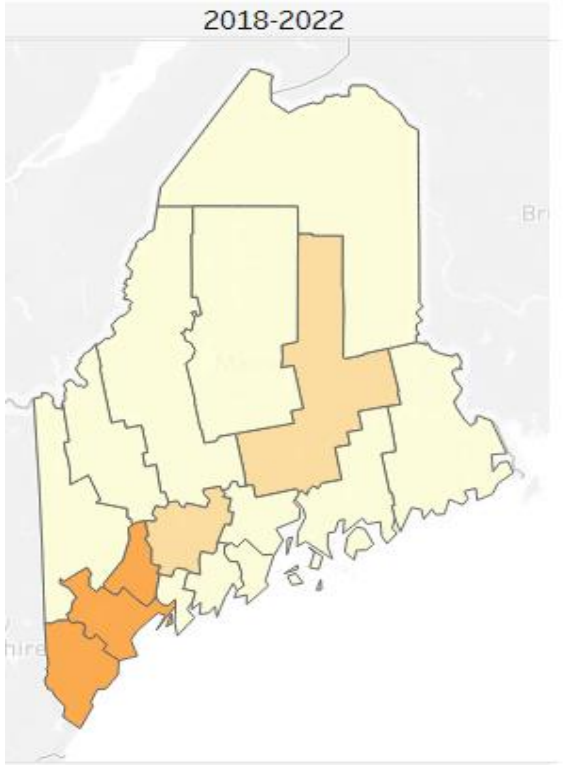
Health Effects of Lead in Children

- In recent years, studies comparing groups of children have demonstrated that even low levels of lead once thought to be harmless, place children at risk for adverse effects.
- Duration of exposure
- Age at exposure
- Amount entering the body
- Amount absorbed by the body



Maine Lead Poisoning Rates for Children 0-5 years old

Estimated Number of Children with a Blood Lead Level ≥5 ug/dL | Age <3 years



- 28% of all buildings in Maine are pre-1950 and most likely to have lead hazards
- In Maine in 2022, an estimated 356 (309 <3yo) children under 6 years had blood lead levels above the 2020 US CDC reference level (BLRV).

Data from the Maine Tracking Network [Childhood Lead Poisoning | MaineTracking Network (mainepublichealth.gov)]

Universal Blood Lead Testing Mandate 2019

Recognizing the importance of identifying children with lead poisoning in order to provide them with DHHS services to reduce their lead exposure, in 2019, the Maine State Legislature mandated that health care providers test all 1- and 2-year-olds for lead poisoning.

APPROVED	CHAPTER
JUNE 27, 2019	479
BY GOVERNOR	PUBLIC LAW

What is a “normal” lead level?

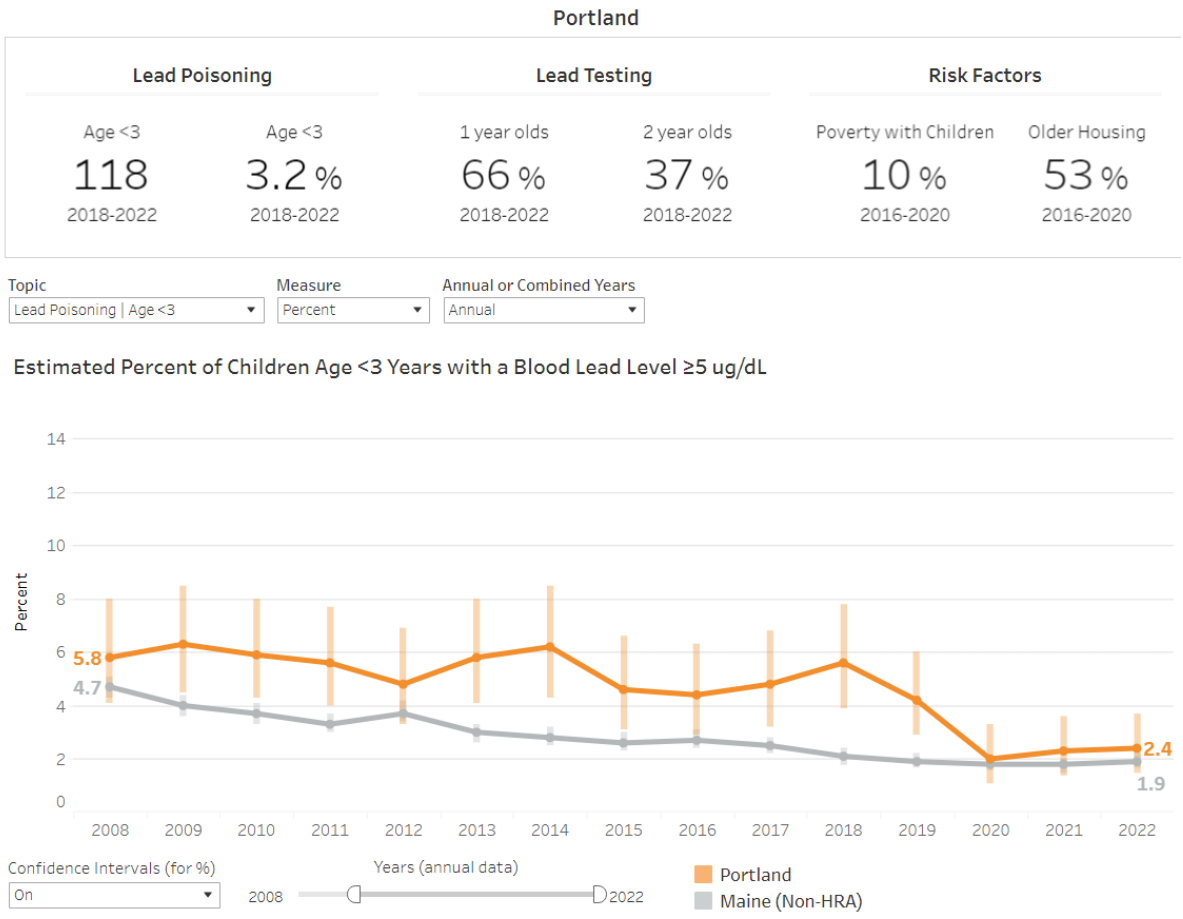
0 µg/dL

- **NO safe level of lead in the blood has been identified.**

2021 National CDC updated BLRV

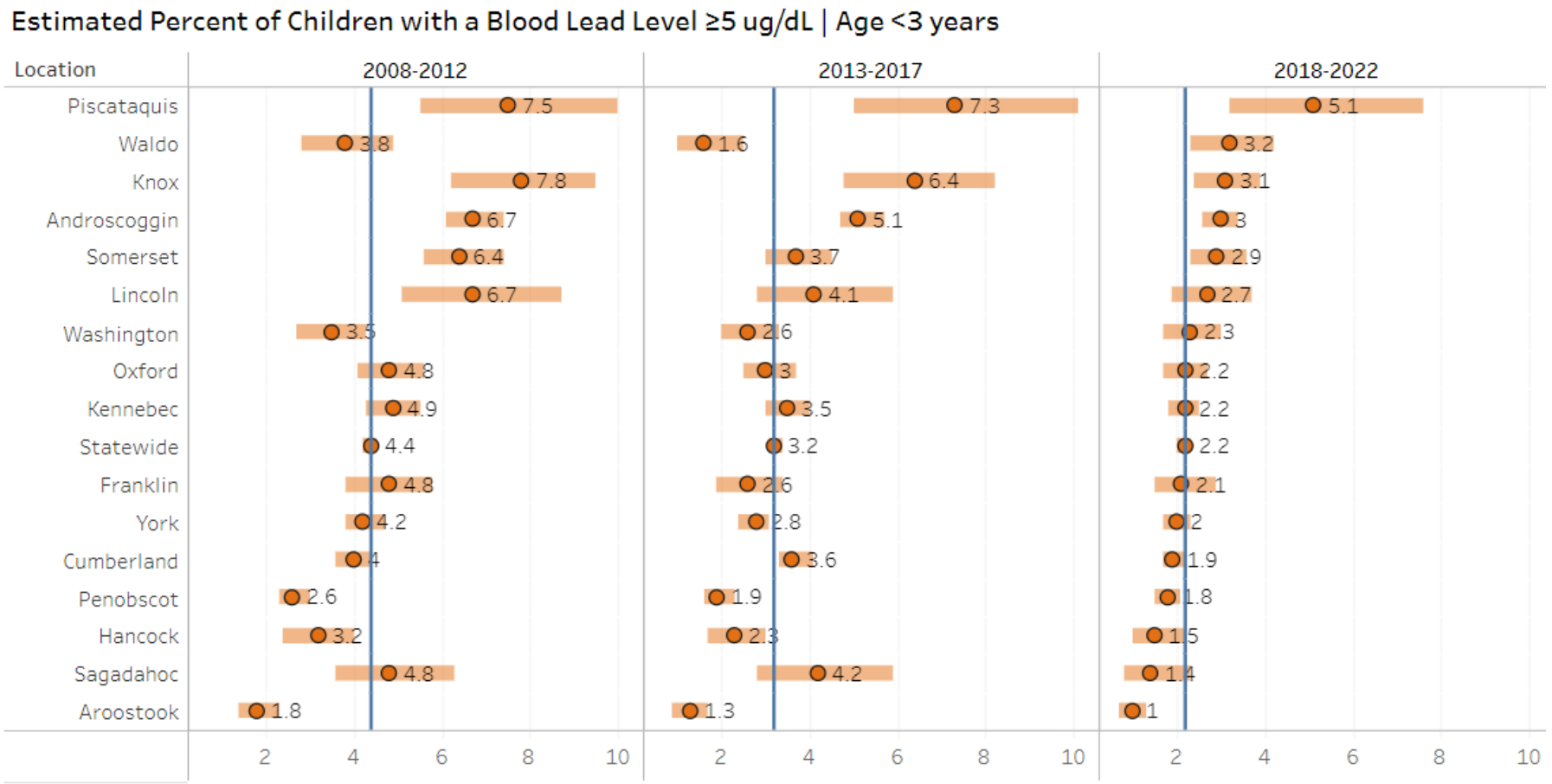
- New Blood Lead Reference Value (BLRV) is ≥3.5µg/dl down from 5µg/dl
- The BLRV is based on NHANES data, not a “normal” level.
  - Children with blood lead levels at or above the BLRV represent those at the top 2.5% with the highest blood lead levels.

Childhood Lead Poisoning in High-Risk Areas



Maine Department of Health and Human Services

Blood Lead Poisoning by Town



Maine Department of Health and Human Services

Children at Risk for Lead Poisoning

ME CDC Pediatric Blood Lead Testing Guidelines

Childhood Lead Poisoning Prevention in Maine

Quick Guide

Key Messages for Parents

- Dust from lead paint in older homes is the most common cause of childhood lead poisoning.
- Children, especially those under 3, often put their hands and toys in their mouths.
- This makes it very easy for lead dust to get into, and damage, their growing bodies.
- The only way to know if a child has lead poisoning is to test them.

Health Effects of Lead Exposure

- Damage to the brain and nervous system
- Slowed growth and development
- Learning and behavior problems
- Speech and hearing problems

Leading to:

- Lower IQ
- Decreased ability to pay attention
- Underperformance in school

Ways to Limit Exposure

- Keep children away from peeling or chipping paint.
- Wash children's hands before eating and sleeping.
- Feed children at a table or in a highchair and not on the floor.
- Wash toys once a week and keep toys away from areas with chipping paint.
- Clean floors, windowsills, and tabletops with wet mops or rags once a week.
- Cover chipping and peeling paint to keep lead from spreading to surrounding areas.
- Avoid sanding and scraping paint in old homes.

Primary Prevention Spotlight

- Providers and families may request a free, do-it-yourself lead dust test kit to identify lead dust in a child's home before a child becomes poisoned.
- These test kits are ideal for families who live in pre-1950 housing, and that have infants (<1 year old), are expecting a new baby, or have a child with a blood lead level <3.5 µg/dL.
- To order a test kit call 207-287-4311 or visit https://bit.ly/3DcAuSp

Maine Childhood Lead Poisoning Prevention Unit - maine.gov/healthyhomes - 207-287-4311 October 2022

Maine Department of Health and Human Services

Maine CDC Pediatric Blood Lead Testing Guidelines

Identifying Children with Lead Poisoning

Maine CDC provides services based on venous lead levels ≥3.5 µg/dL.

- The initial blood lead screening test may be either a venous or capillary sample.
- An elevated capillary sample (≥3.5 µg/dL) must be confirmed with a venous sample.

Age	Blood Lead Testing Requirements
1 year (9 to <18 months)	Mandatory under Maine law
2 years (18 to <36 months)	Mandatory under Maine law
3-5 years (36 to 72 months)	For children covered by MaineCare: • If not previously tested: Mandatory blood lead test • If previously tested: Recommend blood lead test yearly unless risk assessment questionnaire is negative. For children not covered by MaineCare: • Recommend blood lead test yearly unless risk assessment questionnaire is negative.

Risk Assessment Questionnaire – Identifies at-risk children under 6 years of age

If a child's parent or guardian answers 'yes' or 'don't know' to any of the questions below, test the child for lead.

- Does your child spend more than 10 hours per week in any house built before 1950?
- Does your child spend more than 10 hours per week in any house built before 1978 that was renovated or remodeled within the last 6 months?
- Does your child spend time with an adult whose job exposes him/her to lead? (i.e., construction, painting)
- Does your child have a sibling or playmate that has been diagnosed with lead poisoning?

Test at-risk populations annually through 5 years of age, and as clinically indicated, even if the risk assessment questionnaire is negative.

At-risk populations:

- Recent immigrants or international adoptees
- Children whose parents immigrated to the U.S.
- Children with pica behavior
- Children with neurodevelopmental disabilities or conditions such as autism that put them at higher risk for hand-to-mouth behavior
- Children entering foster care

Test all recently arrived refugee children.

- Perform a blood lead test for children 6 months to 16 years upon entry to the U.S.
- Within 3-6 months of initial test, conduct follow-up test for children 6 months to 6 years, regardless of initial test result.
- Consult U.S. CDC Recommendations for Lead Poisoning Prevention in Newly Arrived Refugee Children https://bit.ly/3RCDr31

Identifying Children at Risk for Lead Poisoning

Annual Risk Assessment Questionnaire

- Does your child spend more than 10 hours per week, in any house built before 1950?
- Does your child spend more than 10 hours per week in any house built before 1978 that was renovated or remodeled within the last 6 months?
- Does your child spend time with an adult whose job exposes him/her to lead? (Examples: construction, painting, metalwork)
- Does your child have a sibling or playmate that has been diagnosed with lead poisoning?

Recommended Confirmation and Follow-up Schedule

Clinical Actions for Pediatric Blood Lead Levels ≥3.5 µg/dL

- **The pediatric blood lead reference level is 3.5 µg/dL.** Confirm capillary screening test results ≥3.5 µg/dL with a venous test.
- The sooner providers confirm capillary blood lead tests with venous specimens, the sooner Maine CDC can initiate services to identify and eliminate the sources of their lead exposure.
- The higher the capillary test result, the more urgent the need for a timely confirmatory venous test.
- Confirmatory testing is not required when an initial screening test is performed using a venous sample.

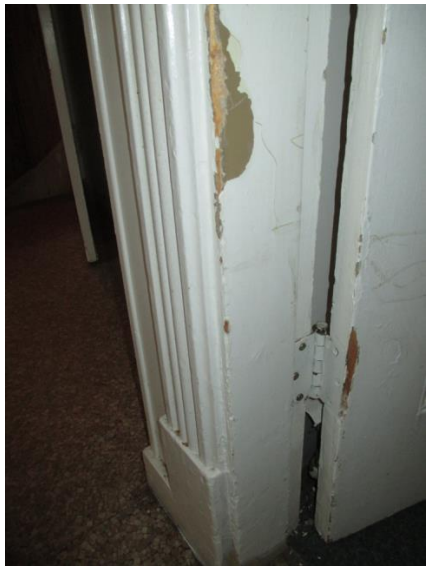
Capillary Blood Lead Level	Confirm with Venous Test
3.5 - <10 µg/dL	As soon as possible, but no later than 3 months
10 - <20 µg/dL	As soon as possible, but no later than 1 month
20 - <45 µg/dL	As soon as possible, but no later than 2 weeks
≥45 µg/dL Urgent Action Needed	Immediately, but no later than 48 hours (place order as STAT)

Venous Blood Lead Level	Follow-up Venous Test Schedule	Recommended Actions Based on Confirmed Venous BLL
3.5 - <10 µg/dL	Within 3 months*	• Complete risk assessment questionnaire to identify potential sources of exposure • Educate on key messages (see Quick Guide page) • Inform patient that Maine CDC will be reaching out
10 - <20 µg/dL	Within 2 months*	• Items above plus: • Ensure child does not have iron deficiency • Check child's development to ensure appropriate milestones are being met
20 - <45 µg/dL	Within 1 month*	• Items above plus: • Consider performing an abdominal x-ray to check for lead-based paint chips and other radiopaque foreign bodies
≥45 µg/dL Urgent Action Needed	Immediately (place order as STAT)	• Items above plus: • Perform complete history and physical exam including detailed neurological exam • Urgent consult with Northern New England Poison Center: 1-800-222-1222

*You may elect to repeat blood lead tests on children with an elevated venous blood lead level within 1 month to ensure that the blood lead level is not rising. Consult U.S. CDC guidelines: https://bit.ly/3QyeaFZ

Children at risk for lead poisoning

Children living in homes built before 1950 are at highest risk for lead exposure. Deteriorated lead paint and resulting lead dust pose the greatest risk, but even intact paint may be a risk for some children.



Children at risk for lead poisoning

- Immigrants or refugees from countries where there is greater lead exposure may arrive with elevated blood lead levels.
- Subsequent residence in rental units with poorly maintained lead paint places them at additional risk.
- Some cultural or dietary practices also may contribute to lead exposures.

Additional Risk Factors for Lead Poisoning

Children at increased risk for lead poisoning:

- Unusual oral behavior (pica)
- Developmental delays
- Behavioral problems
- ADHD
- Autism
- Fe status (more risk for an elevated BLL with iron deficiency)

Testing in Maine

- Who? → All 1 and 2 year olds; +risk assessment; New Mainers; Neuro-atypical children with increased oral behavior; any child who has never been tested.
- How? → POC vs In office cap vs Venous
- Why? → Secondary Prevention to prevent further harm and primary prevention

Identifying Children at Risk for Lead Poisoning

- Blood lead screening may be performed with capillary or venous tests.
- **Due to the potential for contamination, capillary results at or above the reference level of 3.5 mg/dl should be confirmed with a venous sample.**
- A blood lead level, measured in micrograms per deciliter (mcg/dL or mg/dL).
- **Eligibility for case management by the Maine CDC's Childhood Lead Poisoning Prevention Unit is based on an elevated *venous* blood lead level of ≥ 5 mcg/dL.**

Maine CDC's Public Health Response

For Confirmed Venous Blood Lead Levels ≥3.5 µg/dL

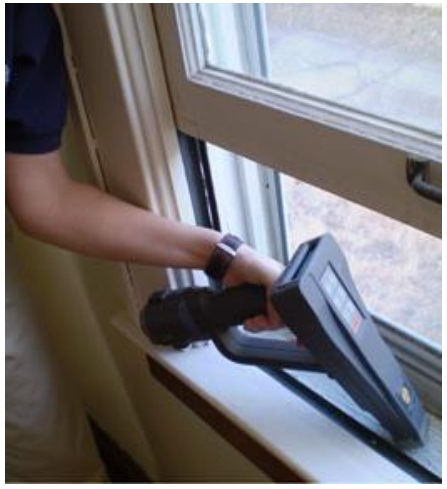
Maine CDC Childhood Lead Poisoning Prevention Unit Response for Children (Ages 0 - <72 months) With Venous Lead Levels	3.5 - <5	5 - <10	10 - <45	≥45
Offer free home lead dust test and if dust levels are high, provide environmental investigation and case management services described below	X			
Conduct environmental investigation of the child's home to identify and remove lead hazards		X	X	X
Provide case management services to: discuss outcomes of investigation, prevent further exposure, and monitor blood lead level		X	X	X
Offer home visit from a public health nurse		As Needed	X	X
CDS referral (lead poisoning is a qualifying diagnosis for CDS)		X	X	X
Coordinate with providers and Northern New England Poison Center on urgent evaluation for chelation therapy and investigation of the child's home environment for lead hazards				X

Additional Resources	
For questions or concerns about blood lead testing, talk to the physician or a nurse on our health team.	207-287-4311
Call the State of Maine Health and Environmental Testing Laboratory to order free blood collection supplies and mailers.	207-287-2727
Download U.S. CDC's factsheet with steps for collecting fingerstick blood samples.	https://bit.ly/3D7Y1E6
Learn more about using the Blood Lead Module in ImmPact to identify patients needing a blood lead test.	https://bit.ly/3RTZamC
Order Maine lead poisoning prevention educational materials for your office.	ehu@maine.gov

Environmental Case Management VBLL ≥ 5 mcg/dL

If a newly identified child with a **venous** blood lead of 5 mcg/dL or greater is living in a rental unit, the landlord must allow an environmental investigation which tests paint, dust, soil, water and any other potential sources for lead.

If the child is living in a private home, the family is offered a free lead inspection

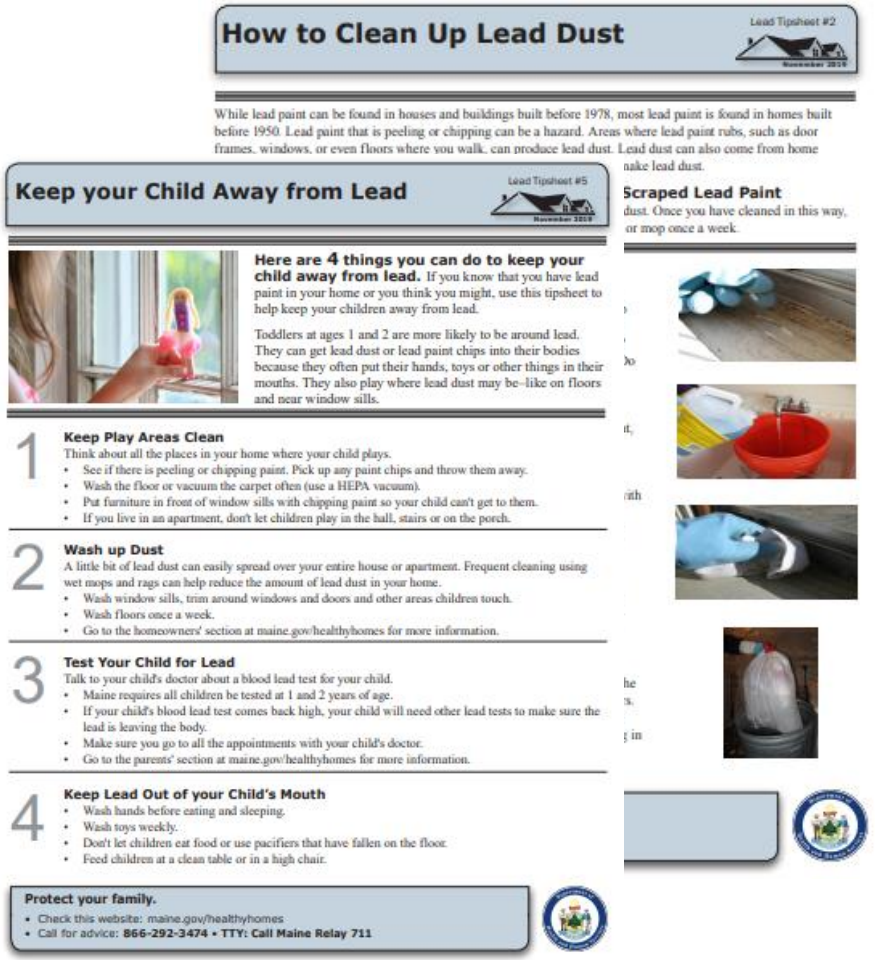



What Can you do?

REVIEW and REINFORCE Interim controls and Lead prevention measures. Keep your eyes open for hazards:

- **Frequent handwashing with soap and water**
- Wash toys weekly
- Wash pacifiers every time they fall on floor
- Discuss nutrition support that can help lead poisoned children (Iron, Vitamin C, Calcium, etc)

- Discuss need for blood test at 1&2yo
- Offer Lead prevention information
- Remind families to connect with their child's doctor to better understand lead levels



How to Clean Up Lead Dust

Lead Tipsheet #2

While lead paint can be found in houses and buildings built before 1978, most lead paint is found in homes built before 1950. Lead paint that is peeling or chipping can be a hazard. Areas where lead paint rubs, such as door frames, windows, or even floors where you walk, can produce lead dust. Lead dust can also come from home

naake lead dust.

Scraped Lead Paint

dust. Once you have cleaned in this way,

or mop once a week.

Keep your Child Away from Lead

Lead Tipsheet #5

Here are 4 things you can do to keep your child away from lead. If you know that you have lead paint in your home or you think you might, use this tipsheet to help keep your children away from lead.

Toddlers at ages 1 and 2 are more likely to be around lead. They can get lead dust or lead paint chips into their bodies because they often put their hands, toys or other things in their mouths. They also play where lead dust may be–like on floors and near window sills.

1 **Keep Play Areas Clean**

Think about all the places in your home where your child plays.

- See if there is peeling or chipping paint. Pick up any paint chips and throw them away.
- Wash the floor or vacuum the carpet often (use a HEPA vacuum).
- Put furniture in front of window sills with chipping paint so your child can't get to them.
- If you live in an apartment, don't let children play in the hall, stairs or on the porch.

2 **Wash up Dust**

A little bit of lead dust can easily spread over your entire house or apartment. Frequent cleaning using wet mops and rags can help reduce the amount of lead dust in your home.

- Wash window sills, trim around windows and doors and other areas children touch.
- Wash floors once a week.
- Go to the homeowners' section at maine.gov/healthyhomes for more information.

3 **Test Your Child for Lead**

Talk to your child's doctor about a blood lead test for your child.

- Maine requires all children be tested at 1 and 2 years of age.
- If your child's blood lead test comes back high, your child will need other lead tests to make sure the lead is leaving the body.
- Make sure you go to all the appointments with your child's doctor.
- Go to the parents' section at maine.gov/healthyhomes for more information.

4 **Keep Lead Out of your Child's Mouth**

- Wash hands before eating and sleeping.
- Wash toys weekly.
- Don't let children eat food or use pacifiers that have fallen on the floor.
- Feed children at a clean table or in a high chair.

Protect your family.

- Check this website: maine.gov/healthyhomes
- Call for advice: **866-292-3474 • TTY: Call Maine Relay 711**

Resources

What resources do you need?

Childhood Lead Poisoning

What You Need to Know

Growing up in a healthy home is an important part of your child's development. Test your child and home for lead to prevent lead poisoning.

What's So Bad About Lead?

Lead can cause:

Behavior Problems | Learning Disabilities | Hearing Damage | Speech Delays | Lower Intelligence

How Do I Know if My Child Has Lead Poisoning?

- Most young children with lead poisoning do not look or act sick.
- The only way to tell for sure if your child has lead poisoning is to have their blood tested.
- Talk to your child's doctor about a blood lead test for your child. Maine requires all children be tested at 1 and 2 years of age.

What Causes Lead Poisoning in Children?

Dust from lead paint in older homes is the most common cause of childhood lead poisoning in Maine.

Lead dust comes from old lead paint as it breaks down, is damaged, or disturbed during everyday use or home repairs.

Lead dust gets on children's hands, toys, and pacifiers which they then put in their mouths.

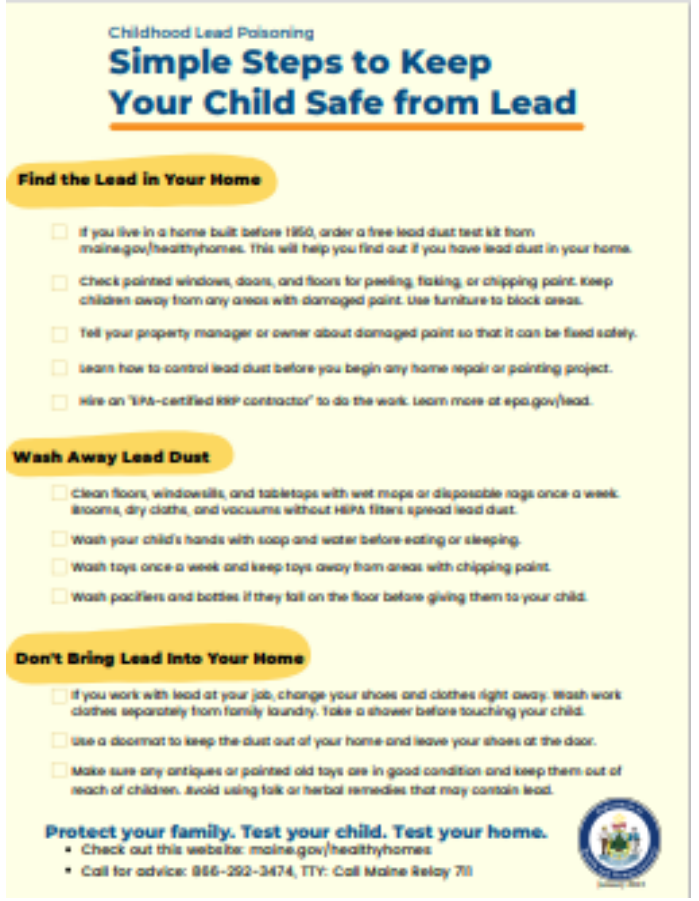
It's easy for dust from lead paint, lead-based paint chips, and soil with lead in it to end up in a child's mouth.

Why are Young Children at Greatest Risk?

- Lead dust can be on floors, windowsills, and places where kids put their hands and play.
- Children, especially those under age 3, often put their hands in their mouths and crawl on the floor. This makes it very easy for lead dust to get into their mouths.
- A tiny amount of lead dust can harm a young child. Children are more likely to be harmed by lead because their bodies and brains are still growing.

Protect your family. Test your child. Test your home.

- Check out this website: maine.gov/healthyhomes
- Call for advice: 866-292-3474, TTY: Call Maine Relay 711



Childhood Lead Poisoning

Simple Steps to Keep Your Child Safe from Lead

Find the Lead in Your Home

- If you live in a home built before 1950, order a free lead dust test kit from maine.gov/healthyhomes. This will help you find out if you have lead dust in your home.
- Check painted windows, doors, and floors for peeling, flaking, or chipping paint. Keep children away from any areas with damaged paint. Use furniture to block areas.
- Tell your property manager or owner about damaged paint so that it can be fixed safely.
- Learn how to control lead dust before you begin any home repair or painting project.
- Hire an "EPA-certified RRP contractor" to do the work. Learn more at epa.gov/lead.

Wash Away Lead Dust

- Clean floors, windowsills, and tabletops with wet mops or disposable rags once a week. Brooms, dry cloths, and vacuums without HEPA filters spread lead dust.
- Wash your child's hands with soap and water before eating or sleeping.
- Wash toys once a week and keep toys away from areas with chipping paint.
- Wash pacifiers and bottles if they fall on the floor before giving them to your child.

Don't Bring Lead Into Your Home

- If you work with lead at your job, change your shoes and clothes right away. Wash work clothes separately from family laundry. Take a shower before touching your child.
- Use a doormat to keep the dust out of your home and leave your shoes at the door.
- Make sure any antiques or painted old toys are in good condition and keep them out of reach of children. Avoid using folk or herbal remedies that may contain lead.

Protect your family. Test your child. Test your home.

- Check out this website: maine.gov/healthyhomes
- Call for advice: 866-292-3474, TTY: Call Maine Relay 711

Questions & For More Information

- Maine CDC Website:

https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/lead/providers.shtml

- Maine CDC Childhood Lead Poisoning Prevention Unit
  - Maggie Bordeau, DO, MPH; 207-592-2432; Margaret.Bordeau@maine.gov