



Lead Exposure Overview

Assistant Commissioner Dan Huff
Senate Health and Human Services Committee
February 8, 2023

Three things to remember about lead

1

Children are most at risk.

2

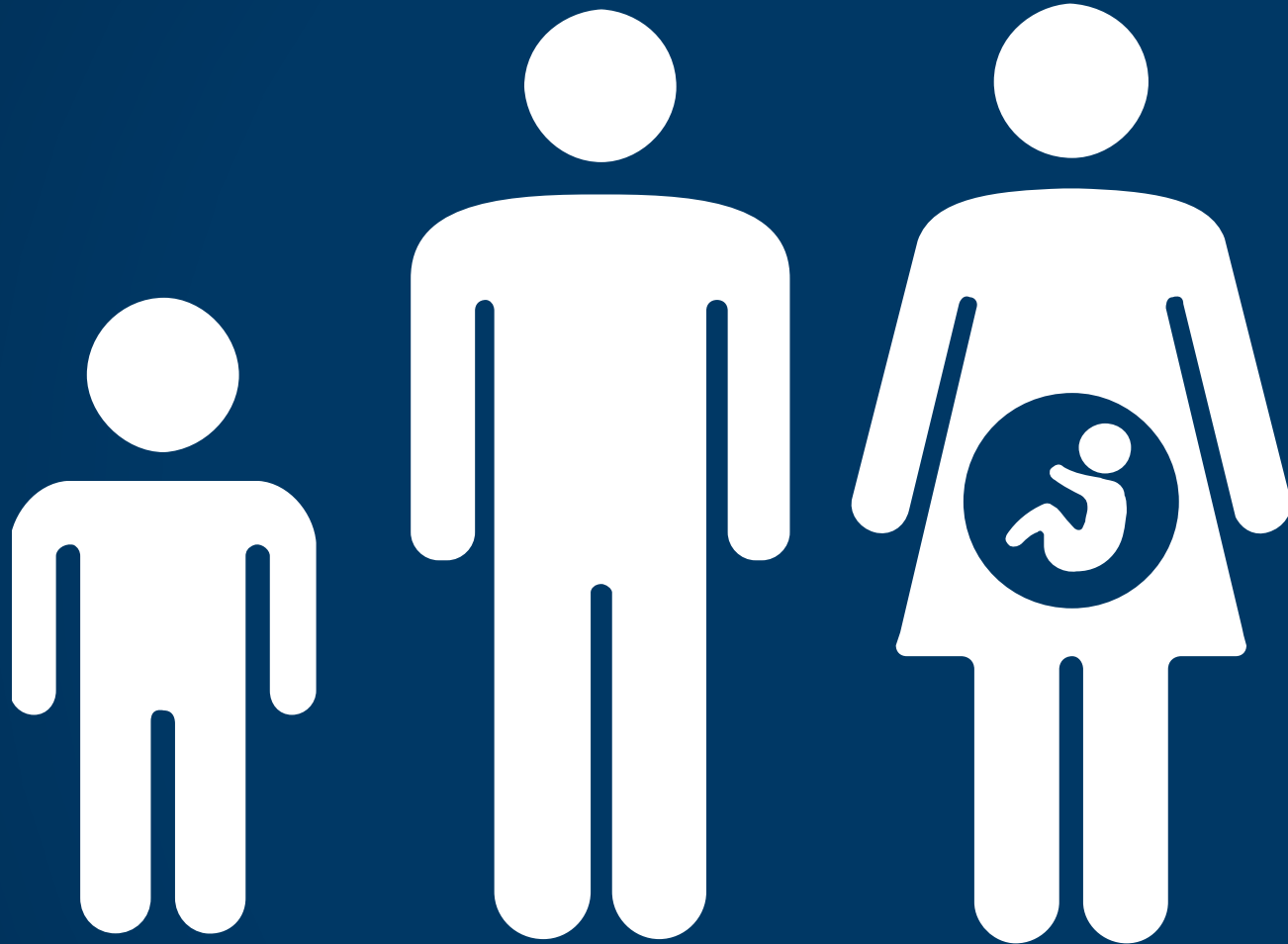
No level of lead is safe.

3

Lead impacts learning and behavior.



Health Effects of Lead



- Memory loss
- Lower IQ
- Behavior Problems
- Headaches
- Fatigue
- Muscle Pain
- Decreased Kidney Function
- High Blood Pressure
- Anemia
- Decreased Fertility
- Increased Risk of Miscarriage

Many individuals with elevated blood lead levels have no apparent signs or symptoms

Lead Decreases IQ



- No threshold detected for lead to begin decreasing IQ
- Magnitude of IQ loss
 - 4–8 IQ points lost as blood lead levels (BLLs) increase up to 10 mcg/dL
 - Additional 2–4 IQ points lost for BLLs 20–25
- IQ point loss most detrimental for children near thresholds for needing additional help because of low IQ

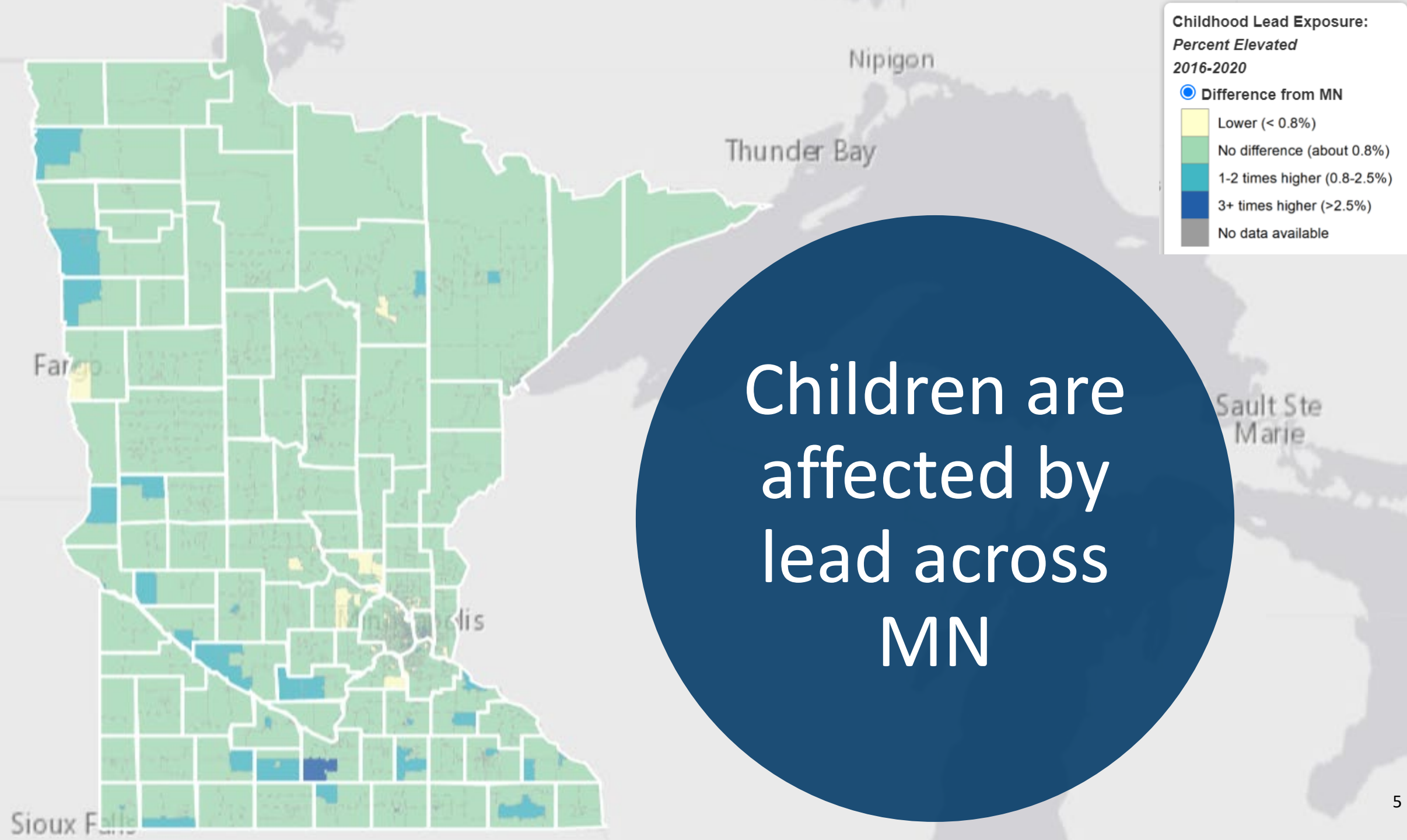
Childhood Lead Exposure:

Percent Elevated

2016-2020

● Difference from MN

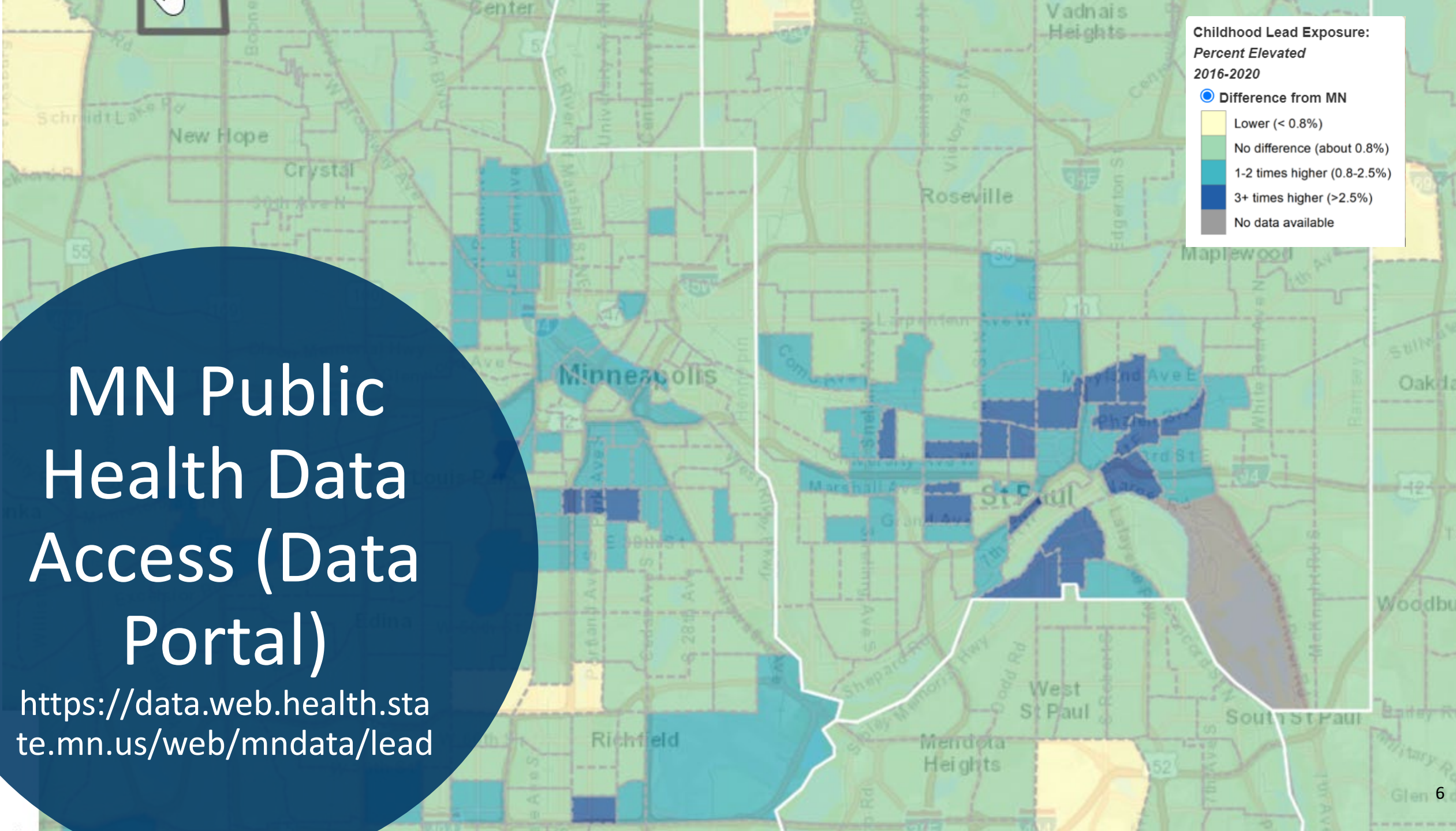
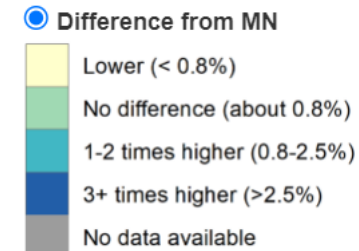
- Lower (< 0.8%)
- No difference (about 0.8%)
- 1-2 times higher (0.8-2.5%)
- 3+ times higher (>2.5%)
- No data available



MN Public Health Data Access (Data Portal)

<https://data.web.health.state.mn.us/web/mndata/lead>

Childhood Lead Exposure:
Percent Elevated
2016-2020



Lead Risk Assessments



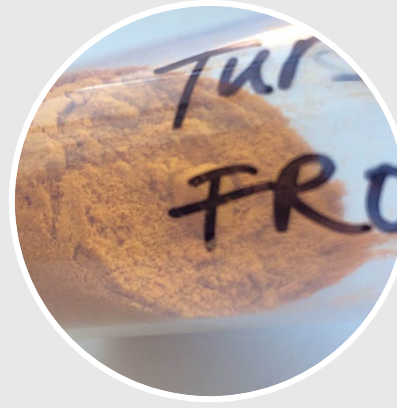
XRF of deteriorated paint



Dust wipe samples



Soil samples



Water and other product samples

Common Sources of Lead for Children



Chipped or peeling lead paint



Spices, pottery, imported food products, cultural or traditional medication and cosmetics

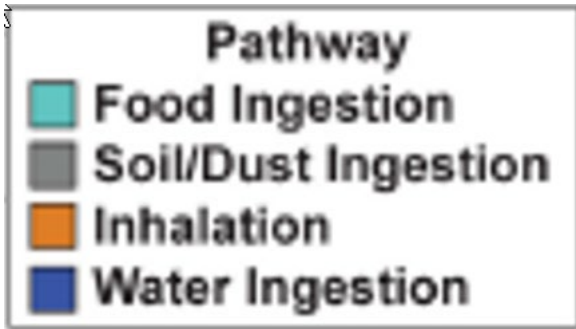


Jewelry, keys and toys

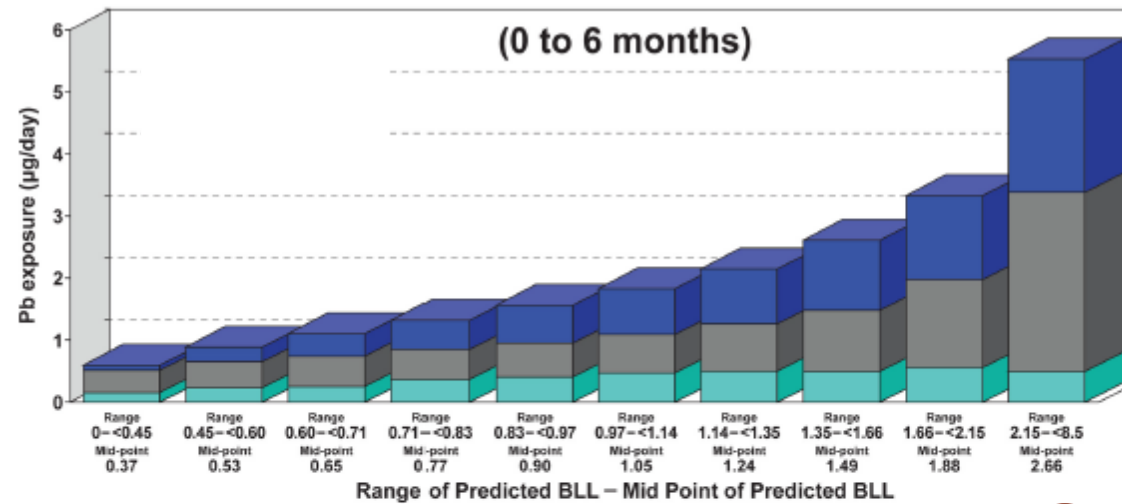


Lead dust from jobs and/or hobbies that work with lead (Take-home lead)

Contribution of Lead from Major Pathways, Zartarian et al., 2017



A Contribution of Effective Pb Exposure from Major Pathways



B

(1 to <2 years old)

Range of Predicted BLL	Mid Point of Predicted BLL
0 - <0.71	0.60
0.71 - <0.85	0.78
0.85 - <0.96	0.91
0.96 - <1.08	1.02
1.08 - <1.21	1.15
1.21 - <1.36	1.28
1.36 - <1.53	1.44
1.53 - <1.83	1.66
1.83 - <2.39	2.03
2.39 - <16.7	3.26

No safe level of lead exposure

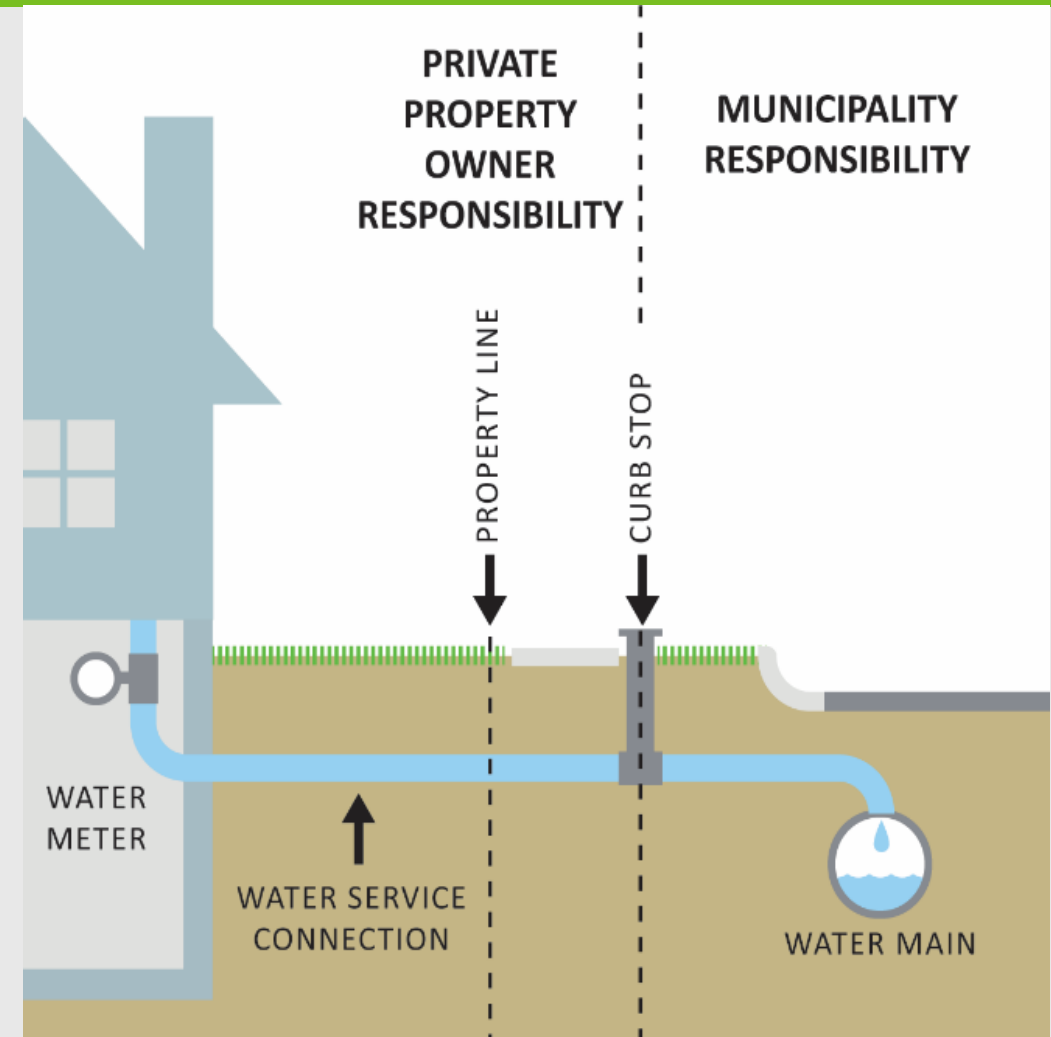
Two main sources of lead in water:

1. Lead service Lines

- ✓ Adds ~50% of lead in drinking water when present
- ✓ Estimate 100,000 in MN
- ✓ Public/private ownership

2. Premise plumbing

- ✓ Lead pipes, solder, and fixtures
- ✓ Brass fixtures
- ✓ Homes with wells: well packers, pre-1995 submersible pumps
- ✓ After plumbing materials 1986 could be 8%; after 2014 no more than 0.25%



There are many **sources** of & **sinks** for lead inside buildings

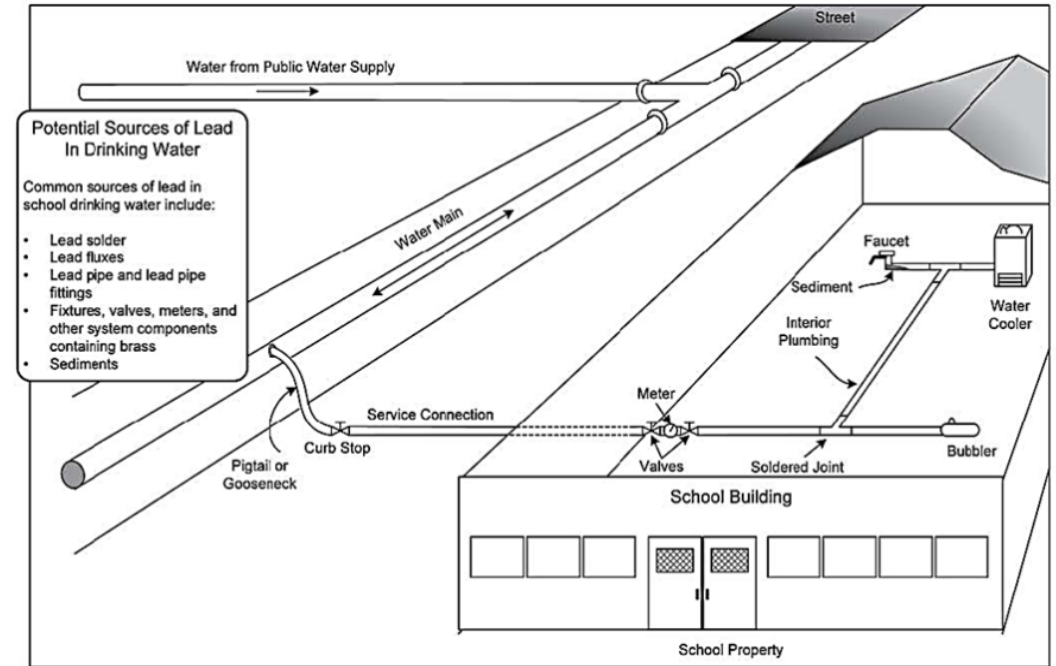
Possible Source

- Lead solder
- Brass parts
- Galvanized steel
- Lead service lines (more likely residential childcare homes)

Possible Sinks (where lead can be caught and accumulate)

- Faucet aerators
- Water cooler strainers
- Valves

Exhibit 1. Potential Sources of Lead in Schools



Source: Environmental Protection Agency

Where can lead be found in schools & childcare facilities?

One Minnesota Budget



MDH FY 2024-25 Biennial Budget Request

- **Lead Service Line Inventory (\$6.0M, GF)**
 - Supporting community water systems in identifying lead hazards and complying with federal requirements (MMB Budget Book, page 133)
 - Provides grants in both fiscal years 2024 and 2025 to community water systems to inventory the materials used for water service lines and include that inventory in a broader asset management plan. The grants will help the community water systems meet the requirements for a lead service line inventory that is part of the U.S. Environmental Protection Agency's proposed Lead and Copper Rule revision as well as prepare these systems to apply for federal money through the Public Facilities Authority to replace the identified lead service lines.
- **Lead Remediation in Schools and Childcare Centers (\$1.0M, GF)**
 - Helping schools and childcares reduce child lead exposure (MMB Budget Book, page 128)
 - Establishes a grant program targeting the reduction of lead in drinking water in schools and childcare facilities, impacting approximately 8,000 childcare facilities serving 270,000 children and just under 2,500 educational facility buildings serving 870,000 students in Minnesota. The proposal requires testing in childcare settings, makes lead testing data easily accessible to the public, and creates a threshold for corrective actions when lead is found in drinking water. Resulting reductions in exposure to lead in water will improve the health and safety of Minnesota's children through enhanced brain development and lifetime productivity.

Thank you!

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