

## Periodic Table of the Elements

■ Alkali Metals    ■ Gaseous State  
■ Alkaline Earth Metals    ■ Liquid State  
■ Transition Metals    ■ Solid State  
■ Other Metals    ■ Synthetically Prepared  
■ Nonmetals  
■ Noble Gases  
■ Inner Transition Metals

1 H 1.0079																	2 He 4.0026												
3 Li 6.941																	10 Ne 20.179												
4 Be 9.0122																	11 Na 22.990	12 Mg 24.305											18 Ar 39.948
19 K 39.098	20 Ca 40.08											29 Cu 63.546	30 Zn 65.38											36 Kr 83.80					
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.22	41 Nb 92.906	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.4	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.90	54 Xe 131.30												
55 Cs 132.91	56 Ba 137.33	57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.4	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.04														
87 Fr (223)	88 Ra (226)	89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np 237.05	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (254)	100 Fm (257)	101 Md (258)	102 No (259)														

\*Name Not Officially Assigned

Latin: *plumbus*

Lead poisoning: plumbism

# Lessons from Flint

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*⌘ The findings and conclusions in this presentation have not been formally disseminated by the Agency for Toxic Substances and Disease Registry and should not be construed to represent an agency determination or policy.*

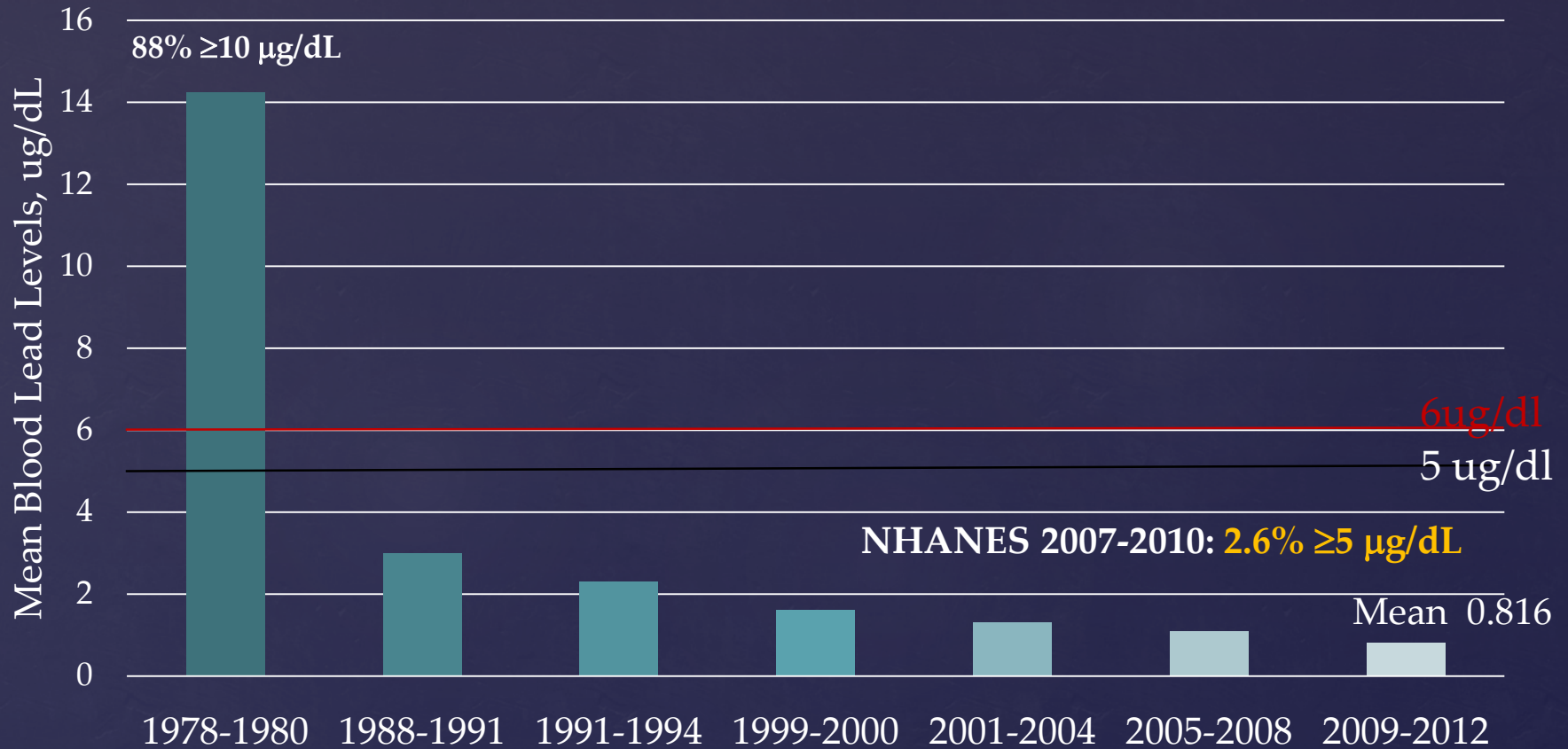
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# Mean Blood Lead Levels in US Children (1-19 yo)



Flint lead levels  $\geq 5 \mu\text{g}/\text{dL}$  - Pre: 2.4% Post: 4.9%

Source: The National Health and Nutrition Examination Survey

76-80 data: <http://www.ncbi.nlm.nih.gov/pubmed/6333758>

88-91 data: <http://www.cdc.gov/mmwr/preview/mmwrhtml/00032080.htm>

91-94 data: <http://www.cdc.gov/mmwr/preview/mmwrhtml/00048339.htm>

99-12 data: [http://www.cdc.gov/biomonitoring/pdf/FourthReport\\_UpdatedTables\\_Feb2015.pdf](http://www.cdc.gov/biomonitoring/pdf/FourthReport_UpdatedTables_Feb2015.pdf)

# *Effectiveness of Early Childhood Education Programs in Reducing Developmental Risks 2015*

- ∞ Nurturing, supportive home
- ∞ High quality preschool and Head Start:
  - ∞ Improvements in language, literacy, and math
  - ∞ Reduced criminal justice costs, improved productivity
  - ∞ Head Start – ↑ reading, writing, vocabulary
    - ∞ General cognitive development

Educational Services for Children Affected by Lead Expert Panel. *Educational interventions for children affected by lead*. Atlanta: U.S. Department of Health and Human Services; 2015

# Language Enrichment

⌘ Begin in early months of life

⌘ TV is NOT a substitute

⌘ Use repetition, enunciate

⌘ Conversation

⌘ Listen

⌘ Be positive (do not correct a child's speech)

⌘ Reading - effect evident by age 2





# Promote Nutritional Health

- Treat iron deficiency
  - Vitamin C ↑ iron absorption
- Ensure Recommended Daily Allowance:
  - Calcium
  - Provide daily multivitamin with iron



Enhanced absorption of lead after prolonged fast (so eat breakfast)

& What should be the public health messages?

& What should be the policy messages?

Lessons from Flint