Bunker Hill Superfund Site
2015 Blood Lead Levels

Panhandle Health District
Idaho Department of Environmental Quality
United States Environmental Protection Agency

2015

Lead Health Intervention Program (LHIP) Annual Blood Lead Surveys

- Public health service offered by the State
- Not a study or experiment
- Box since 1974/1985
- Basin since 1996

Panhandle Health District
LHIP Procedures

Public health service offered to those that live:

- **within the Box and are between *6 months and 9 years of age*, or**

$30.00 cash incentive for participants that live:

- **within the Coeur d'Alene River Basin and are between *6 months and 6 years of age***

- **Prior to blood draws, the parent/legal guardian or adult participant must sign a Consent Form and complete the appropriate Questionnaire**

Panhandle Health District LHIP Procedures

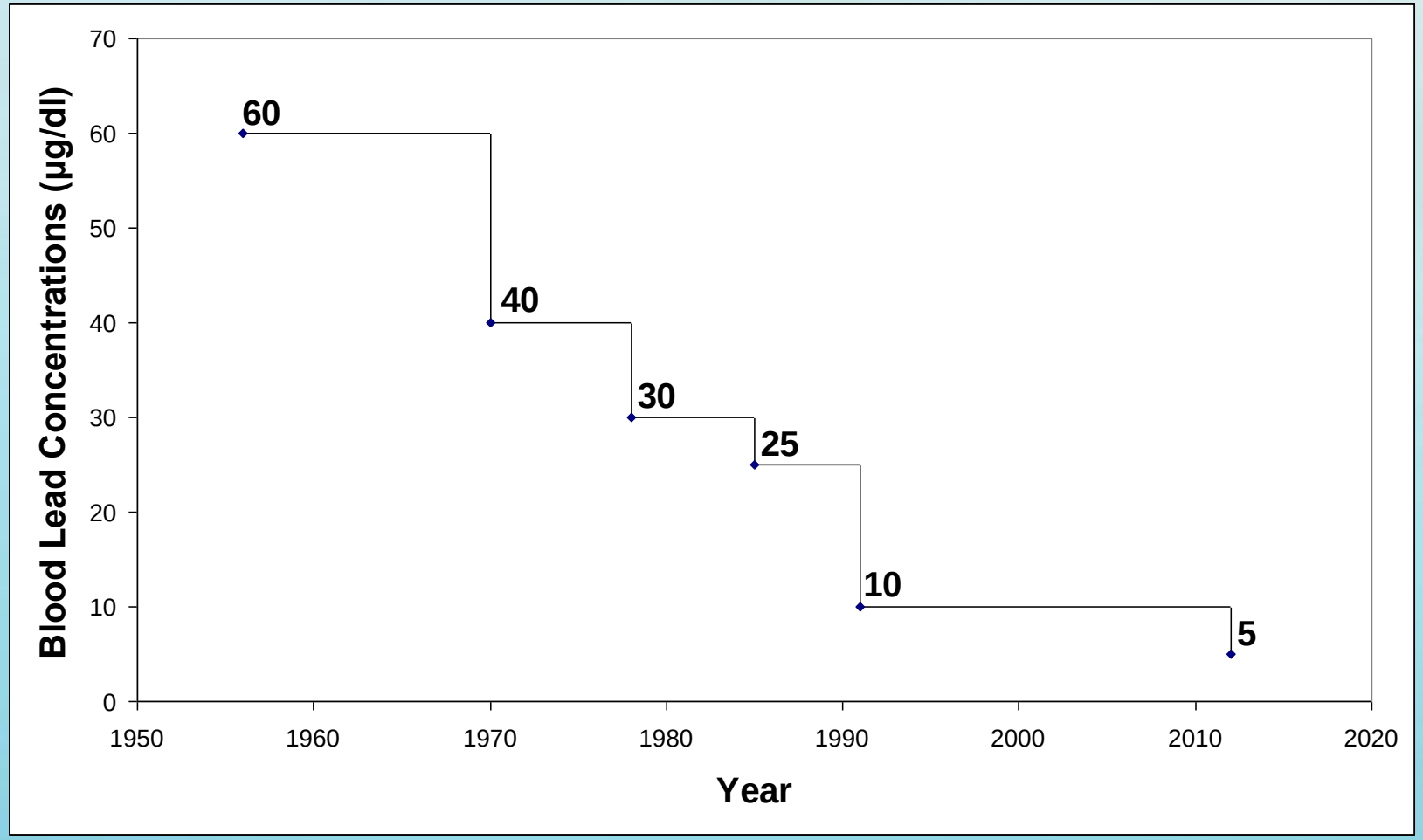
- Screening blood test is done by skin puncture (capillary or fingerstick - FS)
- Results of capillary test are provided to the participant or parent immediately after analysis
- All FS results over 5 µg/dL are followed up with a venous draw conformation test
- Offer consultations and follow-up with all children who test over 5 µg/dL

Health Effects

“ The health effects associated with lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body, especially the nervous system. No safe level of lead exposure has been identified.”

– Centers for Disease Control and Prevention

Decreasing “elevated” blood lead levels



Blood Lead Concentrations Considered to be Elevated by the Centers for Disease Control and Prevention.

*N Engl J Med 2003; 348: p1517-26 (1950 – 1991)

*CDC. Recommendations in “*Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention*”. (2012)

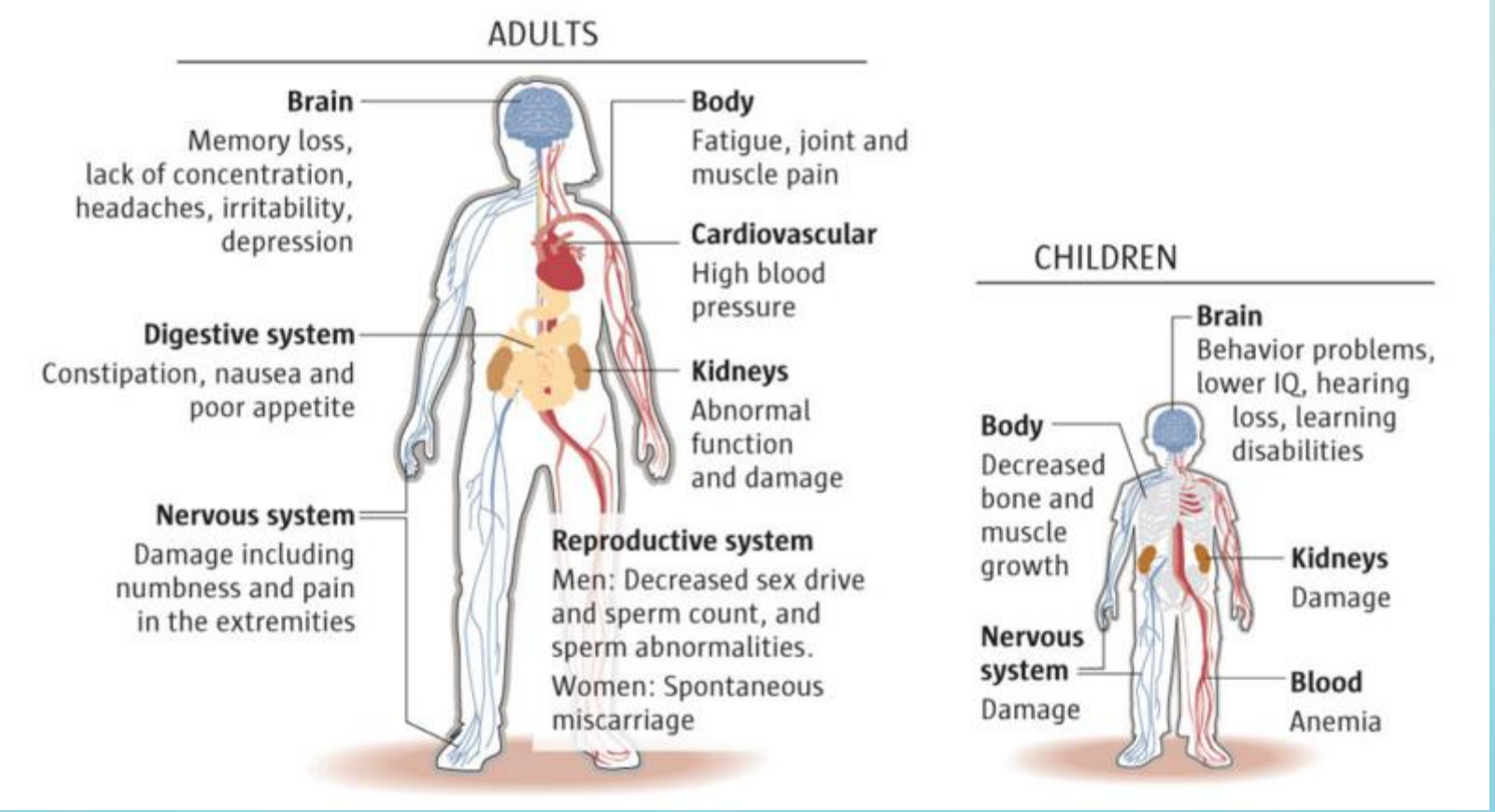
Route of Exposure

- Ingestion – Most common exposure route. Absorption rate of 20-70%
- Inhalation – Almost all inhaled lead is absorbed into the body (ATSDR 2005)
- Blood serves as the initial receptacle of absorbed lead and essentially distributes throughout the body. Making it available to all soft tissue organs.

At Risk Populations

- Children – more affected by lead due to behavior & physiology
- Pregnant women – Readily crosses the placenta adversely affecting fetus
- Adults with cumulative exposure – Generally occupational or hobby related
- Genetically pre-disposed individuals

Health Effects



Health effects – Children vs. Adults

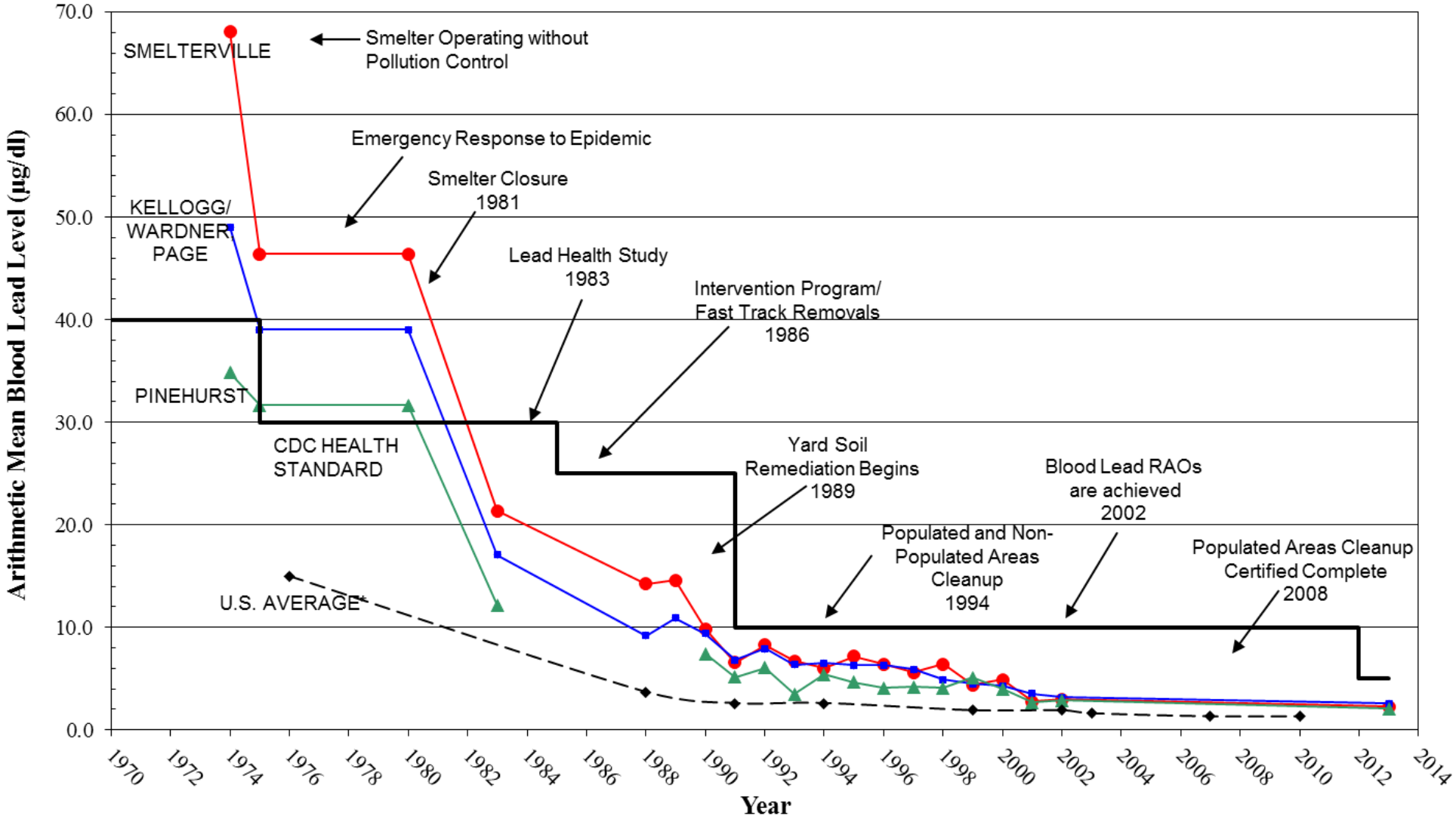
- Children suffer effects from lead exposure at much lower levels
- No safe blood lead threshold for the adverse effects of lead on infant or child neurodevelopment has been identified
- Latent effects of lead exposure during childhood for adults
- Because lead exposure often occurs with no obvious symptoms, it frequently goes unrecognized
- A blood lead test is the best tool for identifying lead exposure

Box

Box
Remedial Action Objectives

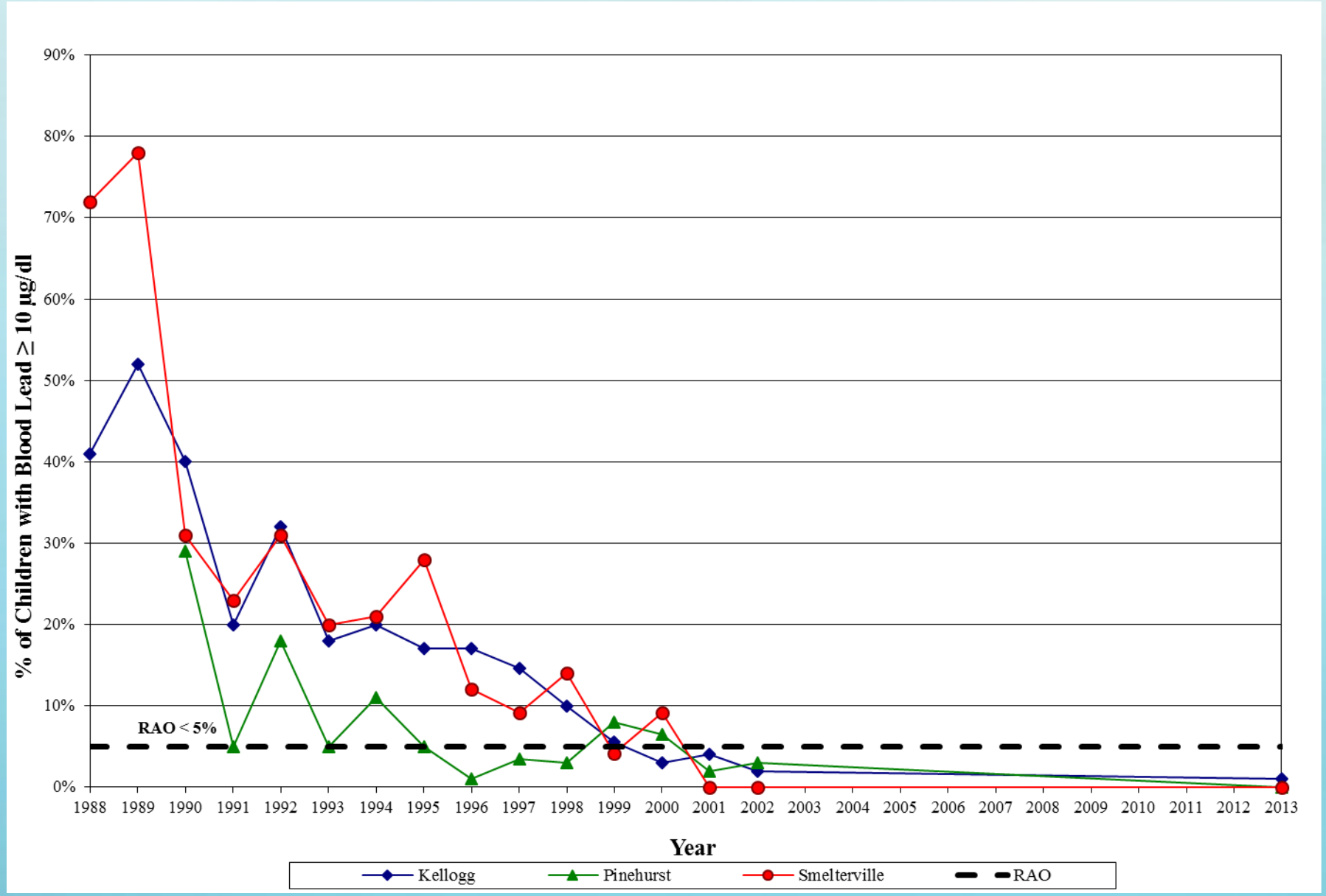
- No more than 5% of children in each community have blood lead levels ≥ 10 µg/dl
- Less than 1% with blood lead levels ≥ 15 µg/dl

Bunker Hill Box
Average Blood Lead: 1974-2013



*Ref.=(Mahaffey et al. 1982; Pirkle et al. 1994; Pirkle et al. 1998 ; Lofgren et al. 2000; CDC 2013)

Percent of Box Children with Blood Lead Levels ≥ 10 µg/dl, by City, 1988-2013



2015 Blood Lead Summary Statistics – Box (age 0-9)

Total Number of Children (N)	6
Minimum (µg/dl)	1.8
Maximum (µg/dl)	3.5
Average (µg/dl)	2.4
Standard Deviation	0.7
Geometric Mean (µg/dl)	2.4
Geometric Standard Deviation	1.3

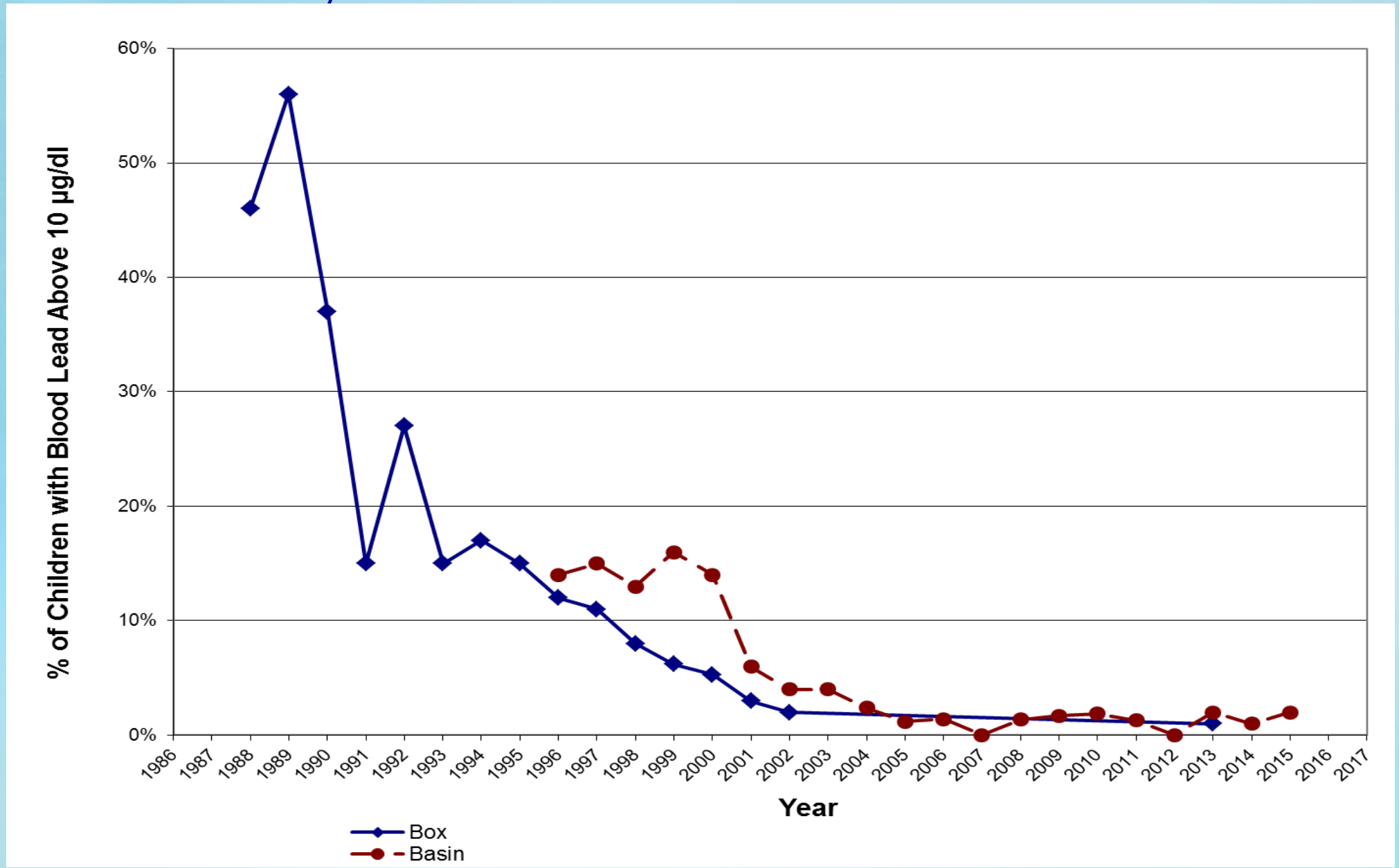
	Number	Percentage
Children's blood lead ≥ 5 µg/dl	0	0%
Children's blood lead ≥ 10 µg/dl	0	0%
Children's blood lead ≥ 15 µg/dl	0	0%

Basin

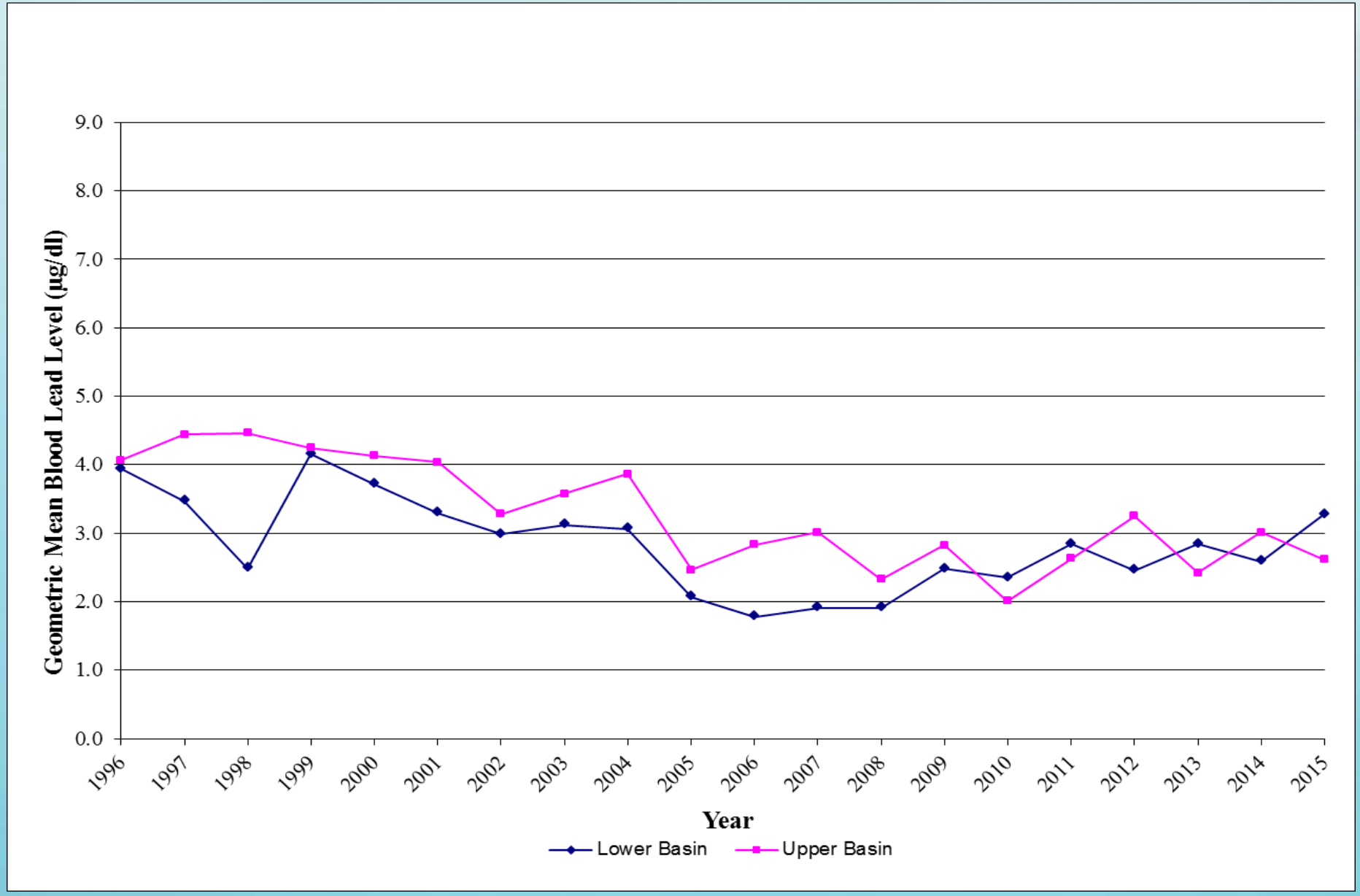
Basin Remedial Action Objectives

- Reduce exposures to soils with concentrations greater than risk-based levels
  - Lead: ≥ 700 mg/kg
  - Arsenic: ≥ 100 mg/kg
- Reduce exposures to lead in house dust
- Cumulative exposures do not exceed USEPA's health risk goals
  - Lead: <5% chance that a typical child at an individual residence does not exceed 10 µg/dl

Percent of Children with Blood Lead Levels ≥ 10 µg/dl, Box and Basin, 1988-2015



Basin Blood Lead Levels, by Year, 1996-2014



2015 Blood Lead Summary Statistics – Basin (age 0-6)

Total Number of Children (N)	94
Minimum (µg/dl)	1.4
Maximum (µg/dl)	13
Average (µg/dl)	3.2
Standard Deviation	1.8
Geometric Mean (µg/dl)	2.8
Geometric Standard Deviation	1.6

	Number	**Percentage**
Children's blood lead ≥ 5 µg/dl	6	6%
Children's blood lead ≥ 10 µg/dl	2	2%
Children's blood lead ≥ 15 µg/dl	0	0%

2015 Blood Lead Summary Statistics – Basin (Pregnant Women)

Total Number (N)	9
Minimum (µg/dl)	1.4
Maximum (µg/dl)	2.3
Average (µg/dl)	1.6
Standard Deviation	0.3
Geometric Mean (µg/dl)	1.6
Geometric Standard Deviation	1.2

	Number	Percentage
Blood lead ≥ 5 µg/dl	0	0%
Blood lead ≥ 10 µg/dl	0	0%
Blood lead ≥ 15 µg/dl	0	0%

2015 Blood Lead Summary Statistics – Basin (other non-eligible children*)

Total Number (N)	14
Minimum (µg/dl)	1.5
Maximum (µg/dl)	3.6
Average (µg/dl)	2.2
Standard Deviation	0.7
Geometric Mean (µg/dl)	2.1
Geometric Standard Deviation	1.4

	Number	Percentage
Blood lead ≥ 5 µg/dl	0	0%
Blood lead ≥ 10 µg/dl	0	0%
Blood lead ≥ 15 µg/dl	0	0%

*aged 7-13 years, except for one child younger than one year of age who was tested after the LHIP blood lead screening.