



PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND
HEALTHIER WASHINGTON

Childhood Lead Poisoning Prevention

Children's Environmental Health Training
August 2, 2011

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Topics we will cover today

- Context of Lead Poisoning in Washington
- Emerging Issues
 - Evolving role of public health
 - Action Levels
 - Consumer Products and Traditional Remedies
- Current Public Health Activities and Resources
 - DOH Activities
 - Case Investigation and management procedures
- Case Studies
- Q&A



Context and Comparisons:

LEAD POISONING IN WASHINGTON



Lead Toxicity

- No known biological function
- Many known harmful effects in many parts of the body
 - Subtle (changes in enzyme levels)
 - Easily observed (tremors, death)
 - Some effects are permanent
- Most signs and symptoms aren't unique
 - Confirm with a blood lead test

Neurodevelopmental Effects

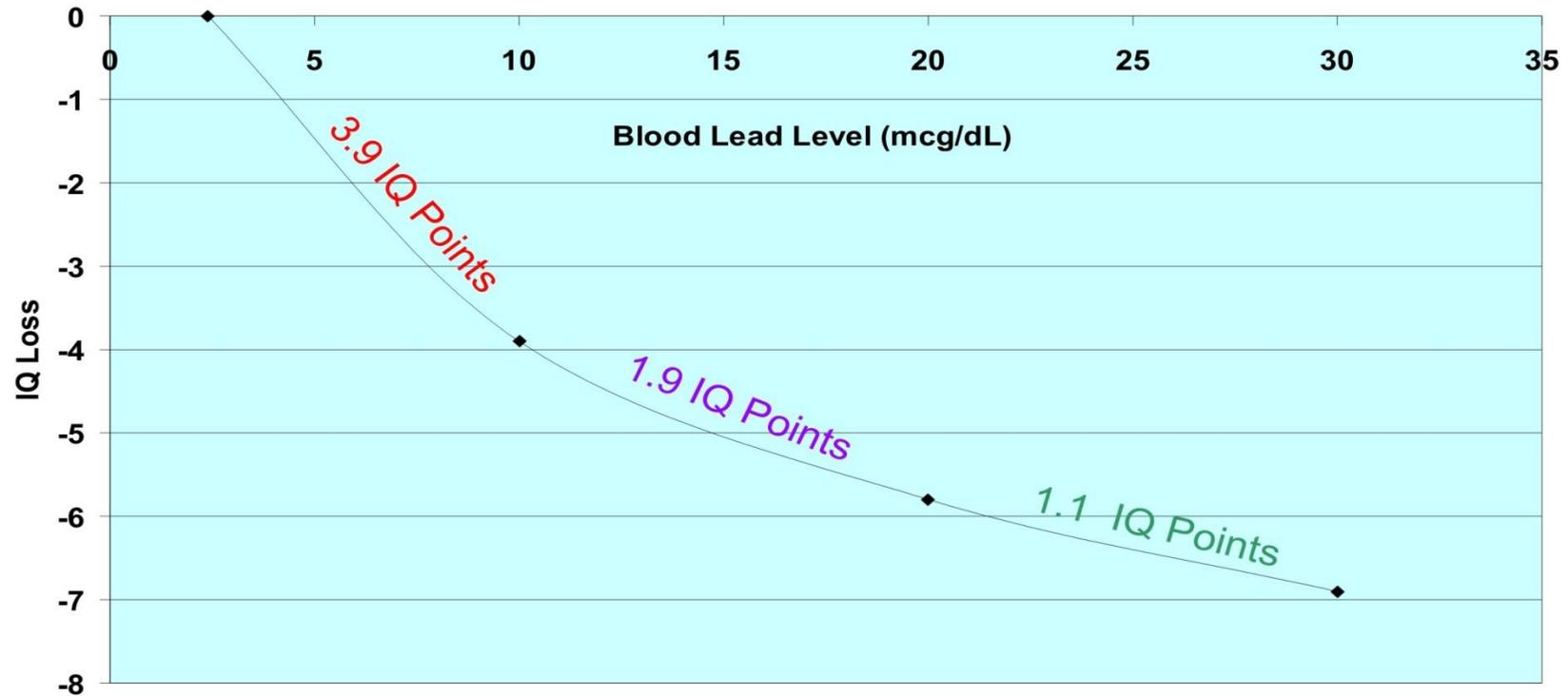
- These days, mostly concerned about subtle, subclinical effects
 - Nervous system damage
 - Lowered IQ
 - Decreased learning ability
 - Decreased attention span
 - Lower school test scores
 - Reduced fine motor skills
- Increased dropout rate, aggressiveness, and criminal behavior

Effects at BLLs < 10 $\mu\text{g}/\text{dL}$

- Neurodevelopmental impairment
 - 4 studies reported effects at 2 to 3 $\mu\text{g}/\text{dL}$ with no evidence of a threshold
- Delayed puberty in girls
- Decreased growth
- Increased stress-induced cortisol

IQ Loss versus BLL

Lanphear, 2005



We've stopped using lead in these products, but...

What happened to the lead that car exhaust introduced into the environment before 1978?

Where is all the lead paint?



Exposure to Lead

- Everyone's exposure is different
 - And can change over time
- Lead poisoning can come from big exposure to one source
- Exposures add up; poisoning from smaller exposures to several sources

When we talk about lead poisoning, we compare:

- The number of children tested for lead
- The percent of children tested who have blood lead levels of $10 \mu\text{g}/\text{dL}$ or higher.



Washington ranks 17th in the nation in the number of houses built before 1950.

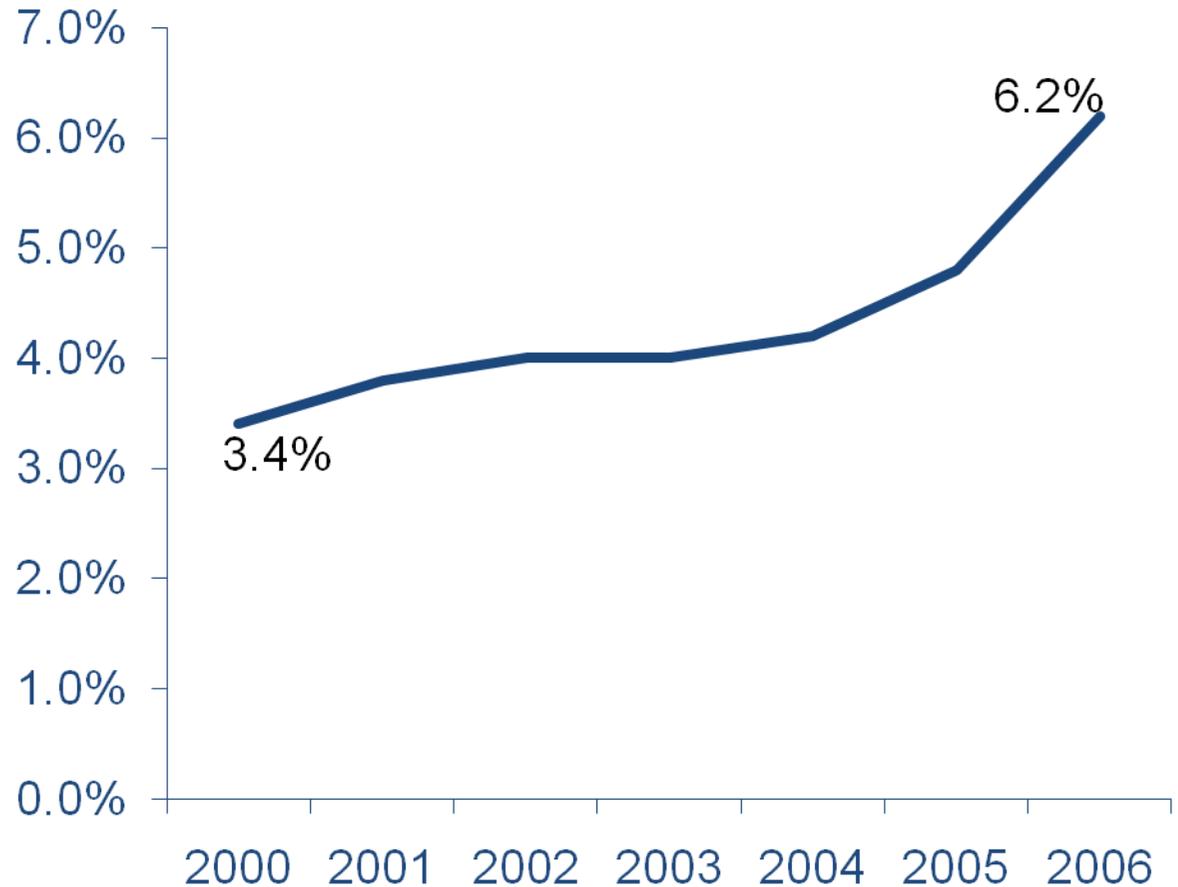
Washington also has large areas of land with soil that have been contaminated with lead by the former Asarco smelter and by pesticides applied to former orchard sites.



Child Blood Lead Registry

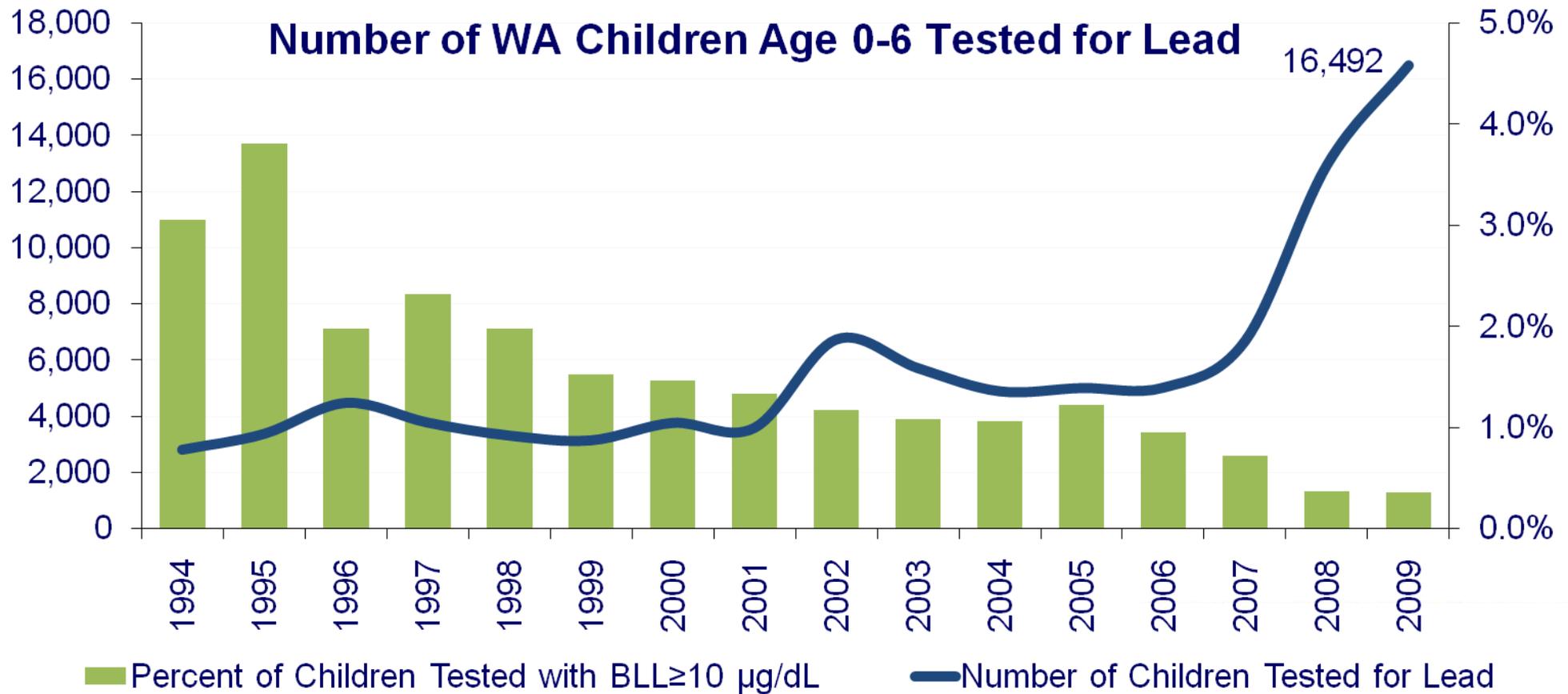
- Maintains record of all blood lead tests on WA children since May 1993
- May not be representative of all children in WA

Percent of WA Children Tested for Lead before their Third Birthday, by Birth Year

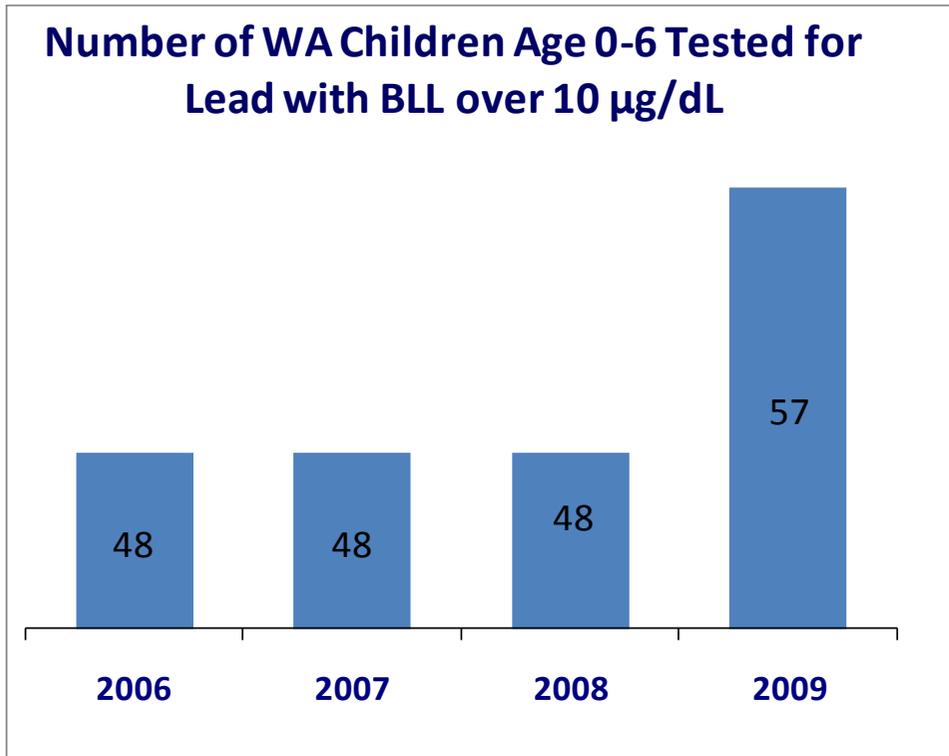


WTN Indicator

Blood Lead Testing has Increased

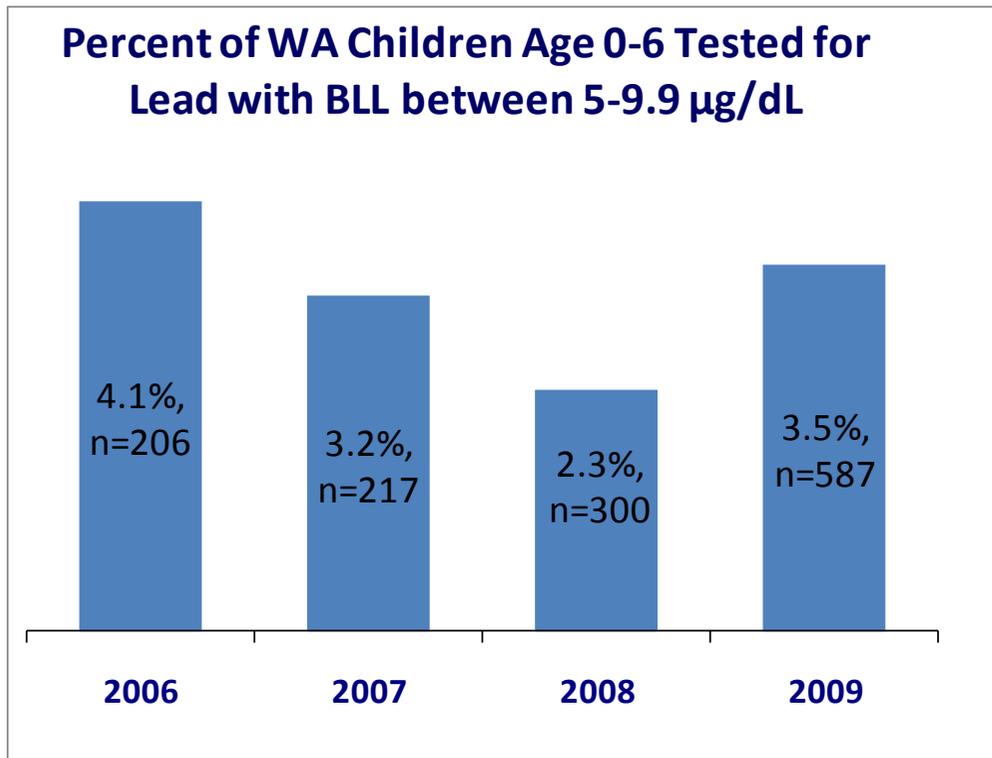


Lead Poisoning in WA Children: 10+ $\mu\text{g}/\text{dL}$



- As more children have been tested, the percent of children with BLL $>10 \mu\text{g}/\text{dL}$ decreased.
- However, the actual number of children needing services is about the same.

Lead Poisoning in WA Children: 5-9 $\mu\text{g}/\text{dL}$



- Children can be harmed by BLL as low as 2 $\mu\text{g}/\text{dL}$ (or lower).
- Children with BLL less than 10 $\mu\text{g}/\text{dL}$ generally do not receive confirmatory tests or other public health services.

Public Health Approach

Surveillance

- Maintaining the Child Blood Lead Registry
- Special projects to test high risk children

Outreach

- Engaging the medical and public health communities
- Partnering with CHILD Profile
- Disseminating primary prevention messages

Case Investigation and Management

- Partnering with local health
- Connecting families to community resources



**Targeted provider
& public outreach
& education**

**High-risk
children are
tested**

So that....



**Fewer WA
children are
lead poisoned**

**Identify trends and
risk factors for
lead poisoning**

**Follow-up
intervention**

**Robust
surveillance
data**

**Data
collection
& analysis**

Expert Panel on Childhood Blood Lead Screening

- Reviewed and updated the childhood blood lead screening recommendations in light of new data and potential exposure sources
- Representatives from public health, clinical providers, academia and DSHS Medicaid

Recommendations to DOH Program

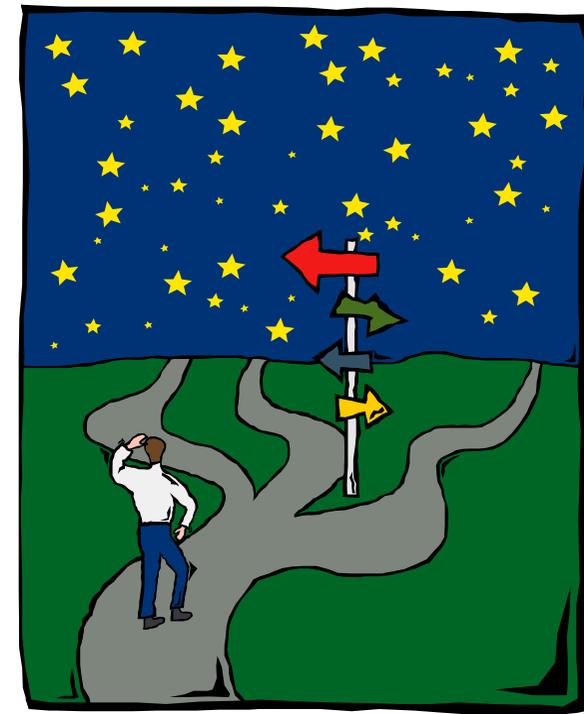
- Focus on primary prevention through a Healthy Homes model
- Conduct systematic surveillance project
- Screen high risk children
- Intervene at blood lead levels (BLL) between 5 and 9 $\mu\text{g}/\text{dL}$

DOH Screening Recommendations

- Health care providers should consider a child's risk factors, and use their clinical judgment to decide which children need a blood lead test.
- There is no demographically defined group of children that is at high enough risk to warrant universal testing in Washington.

A Budgetary Note...

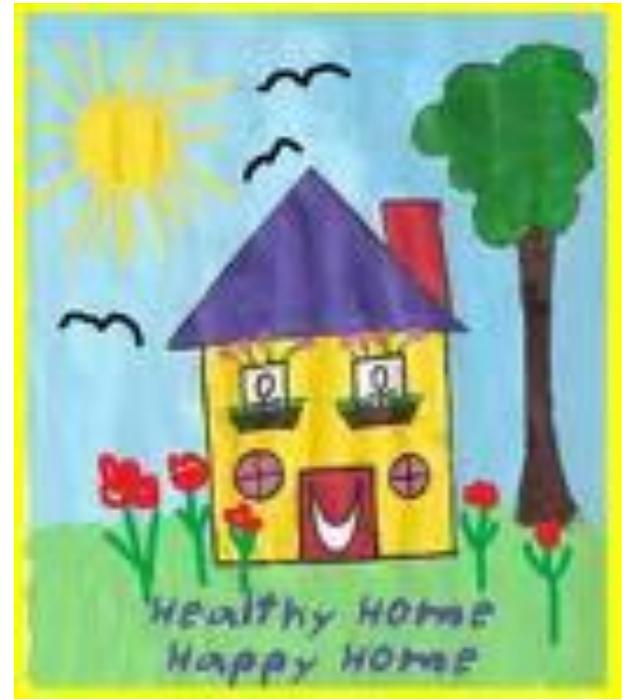
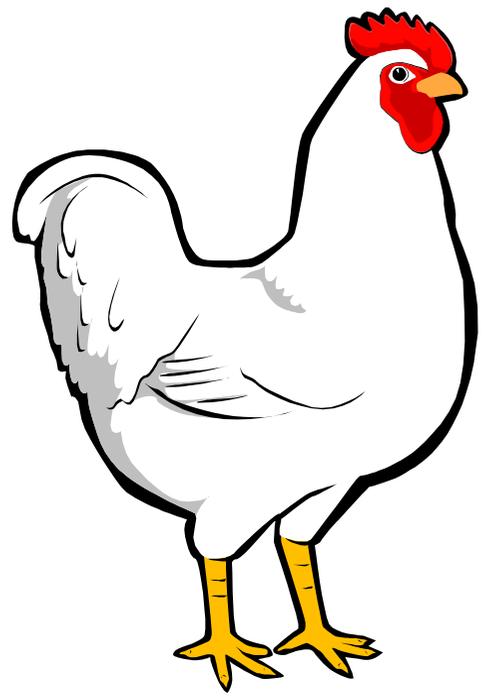




Changing roles, risks, and approaches:

EMERGING ISSUES IN LEAD POISONING

Healthy Homes



Action Levels

- Used as a way to manage public health resources
- Not a statement of a “safe” lead level.
- Current consideration of lowering public health action level from 10 $\mu\text{g}/\text{dL}$ to 5 $\mu\text{g}/\text{dL}$

In Washington, about:

2.5 million
households

0.5 million
households built
before 1950

1.5 million
households built
before 1978

Grain-of-salt sized
paint chip with 50%
lead = BLL increase of
~10 $\mu\text{g}/\text{dL}$



Lead in Water

From plumbing, not
source water

Most homes have
some lead in plumbing

Most people have a
little exposure,
some people have
a lot



Lead in Soil

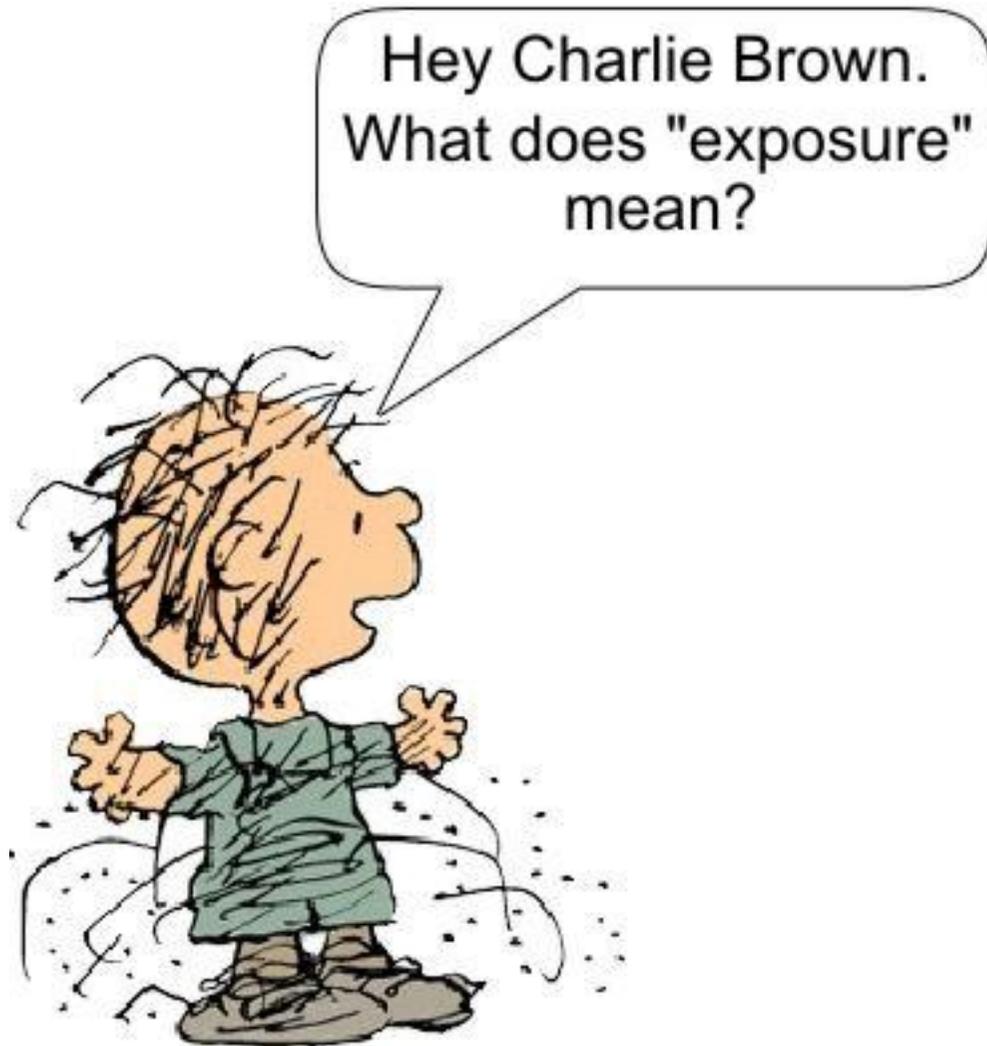
Hundreds of
thousands of acres
in WA

Industrial emissions

Lead arsenate
pesticide

Leaded gas

Exterior lead-based
paint



Consumer Products

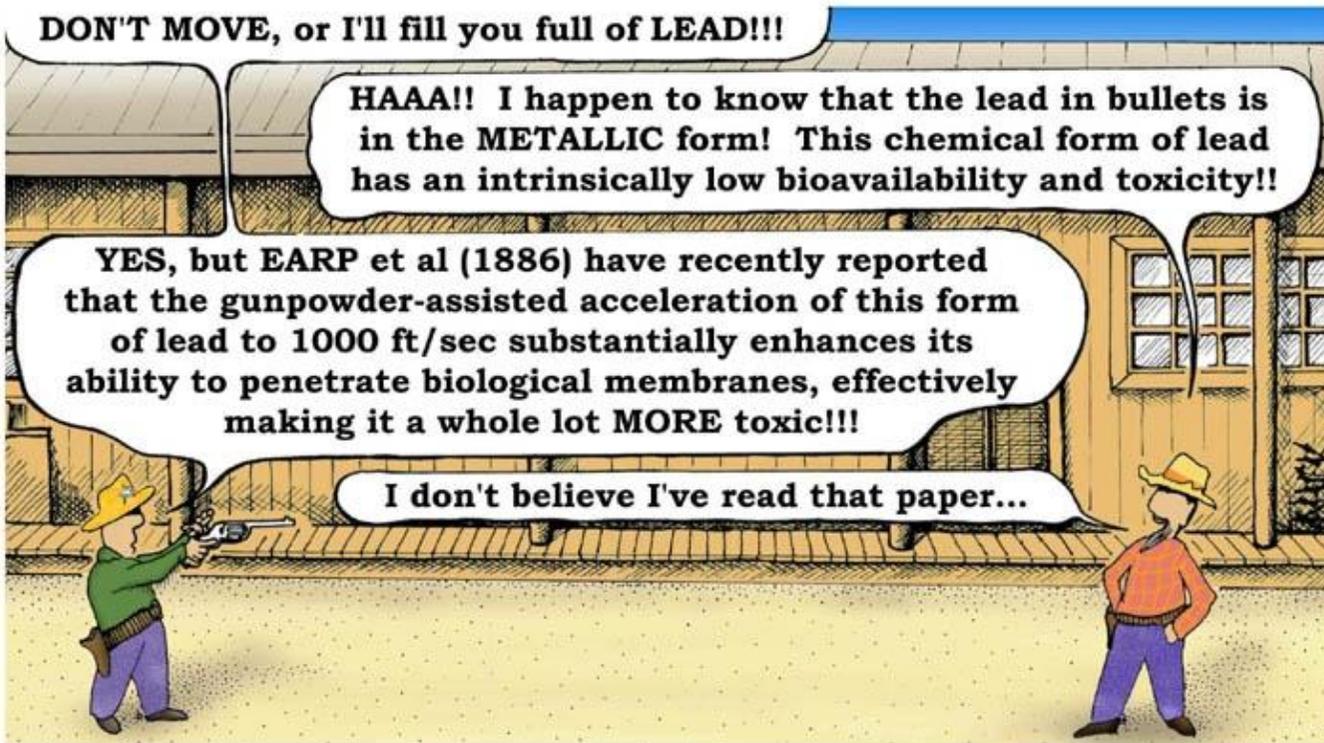
Children interact with their products differently than adults do.



Lead Poisoning from Products

- Imported foods and spices
- Mexican candy
- Imported cosmetics
- Pottery and dishes
- Beverage containers
- Miniblinds
- Jewelry
- Toys
- Bullets and shot
- Fishing sinkers
- Curtain weights
- Key chain
- Pool cue chalk

Shooting Ranges



ENVIRONMENTAL SCIENTISTS IN THE WILD WEST

Lead Exposure at a Gun Range

- Background
 - 3 children identified through their primary care provider with elevated blood lead levels
 - Only significant exposure identified was indoor shooting range
- Assessment
 - Survey, Blood Lead Level Testing, & Environmental Assessment
- Outcomes
 - Recommendations for shooters
 - Environmental recommendations

Finding from Blood Assessment

- Blood Lead Testing
 - 42 shooters tested (10 Adults and 32 Children)

Age Group	Range	<5 µg/dL	5-9.9 µg/dL	10-19.9 µg/dL	≥ 20 µg/dL
Child <18 years old	0.6-20	12 (37.5%)	8 (25.0%)	11 (34.4%)	1 (3.1%)
Adult	2.4-29.1	1 (10%)	3 (30%)	4 (40%)	2 (20%)

Findings from Blood Lead Assessment Cont.

- After controlling for potential confounders, there was a statistically significant linear relationship between amount of time spent shooting at the club and blood lead level.
- Plain Language Interpretation: The more time you spent shooting at the club the more likely you were to have an elevated blood lead level.

Findings from Environmental Assessment

- Lead contamination through out facility including kitchen and classroom
- No measurable airflow at the firing line
- Range was positively pressured so when guns fired lead dust came out of range into classroom, kitchen, and outdoors

Outcome

- Recommend that the club remediate the environmental factors contributing to lead exposure
- Recommended that children under 18 not be allowed to shoot in the club until environmental factors are remediated

Traditional Remedies

- Some have a lot of lead (20 to 95%)
 - Greta, Azarcon, Surma, Kohl, etc.
- Since remedies are ingested intentionally and often in relatively large amounts, even slight contamination can cause lead poisoning
- Some used as makeup for young children

Listening to immigrant parents

- Received \$96,669 from EPA starting in April 2010 to:
 - Investigate use of lead-containing traditional remedies in Hispanic populations in WA
 - 12 key informant interviews; one focus group
 - Develop and disseminate culturally appropriate educational materials

Key Messages for Parents

- Azarcon and Greta can cause lead poisoning and should not be used to treat empacho.
- Empacho can be treated safely with teas, massage, and other alternatives. Parteras and Sobradoras are good people to talk with about treating empacho with massage.
- Tell your doctor if your child has been given a home remedy for empacho.

Recommendations to Public Health

- Create culturally appropriate venues for communication about health
 - Mothers' groups, community outreach group, train lay health educators
- Use local Spanish-language radio to distribute messages
- Reach out to curanderos
 - Yerberos (Herbalists)
 - Sobaderos (Muscle and massage therapists)
 - Parteras: (Midwives)

CURRENT PUBLIC HEALTH ACTIVITIES AND RESOURCES

Case Investigation and Management

- DOH notifies LHJ through PHIMS of an elevated blood lead test
- First step: Talk to health care provider
- Why was this child tested? What risk factors were suspected?
- Is this a confirmed elevated? If not, recommend a confirmatory test.

- Parent interview
- Home visit, if necessary
- Further tests on paint, samples?
- Note other issues in the home
- “Most likely exposure source”

Child blood lead.investigation form.pdf - Adobe Reader

File Edit View Document Tools Window Help

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Mail or fax completed form to:
WA State Dept of Health
Childhood Lead Poisoning
Prevention Program
PO Box 47846
Olympia, WA 95604-7846
Fax (360)236-3059

LHJ Use ID _____
 Reported to DOH Date ___/___/___

Classification
 Confirmed
 Probable

Outbreak-related
LHJ Cluster# _____
LHJ Cluster Name: _____
DOH Outbreak # _____

Child Blood Lead

County _____

REPORT SOURCE

LHJ notification date ___/___/___ Investigation start date: ___/___/___

Reporter (check all that apply)
 Lab Hospital HCP
 Public health agency Other

OK to talk to case? Yes No Don't know

Reporter name _____
Reporter phone _____
Primary HCP name _____
Primary HCP phone _____

PATIENT INFORMATION

Name (last, first) _____
Address _____ Homeless
City/State/Zip _____
Phone(s)/Email _____
Alt. contact Parent/guardian Spouse Other Name: _____
Zip code (school): _____ Phone: _____ Grade _____
School/child care name _____

Birth date ___/___/___ Age _____
Gender F M Other Unk
Ethnicity Hispanic or Latino
 Not Hispanic or Latino
English speaking? Y N Unk
Native language _____
Race (check all that apply)
 Amer Ind/AK Native Asian
 Native HI/other PI Black/Afr Amer
 White Other

CLINICAL INFORMATION

Clinical Findings _____ Y N DK NA

8.50 x 11.00 in

Advise family

- Follow-up blood lead tests
- Public health recommendations: behavioral, environmental
- Enriching learning environment

Available Resources

- Department of Commerce has several grants that may help assess and/or remediate hazards, if family is eligible
- Partnership with Ecology
- Master Home Environmentalist may help control dust
- PEHSU can consult with health care provider
- DOH, Other LHJs, states
- Schools, early intervention programs

15 Minute Break



Should this child have a blood lead test?



- 18 month-old girl
- Lives in house built in 1912.
- Paint appears in good condition.

Should this child have a blood lead test?



- 2 year-old girl
- No noted risk factors

Should this child have a blood lead test?



- 9 month-old girl
- Puts toys in her mouth
- Parents unsure if any of the toys had been recalled for lead.

Should this child have a blood lead test?



- 4-year old boy
- Child's bedroom is decorated with “shabby chic” antique furniture, some of which has charming peeling paint.
- Child has slept and played in room for 4 years.

Should this child have a blood lead test?



- 18 month-old girl
- Recently adopted from China

Should this child have a blood lead test?



- 3 year-old boy
- No known risk factors
- Enrolling in Head Start

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