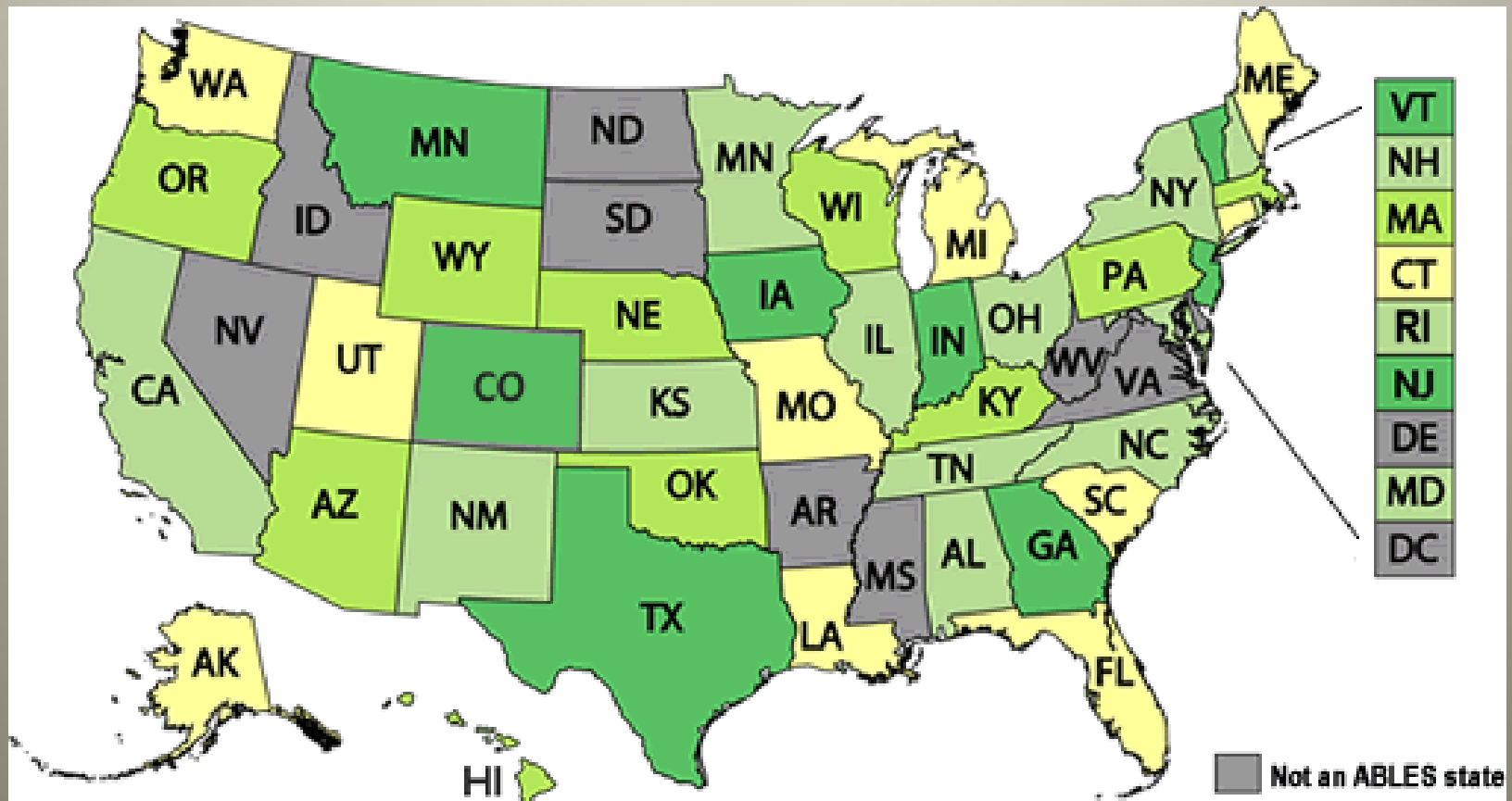


EBLLS IN ADULTS



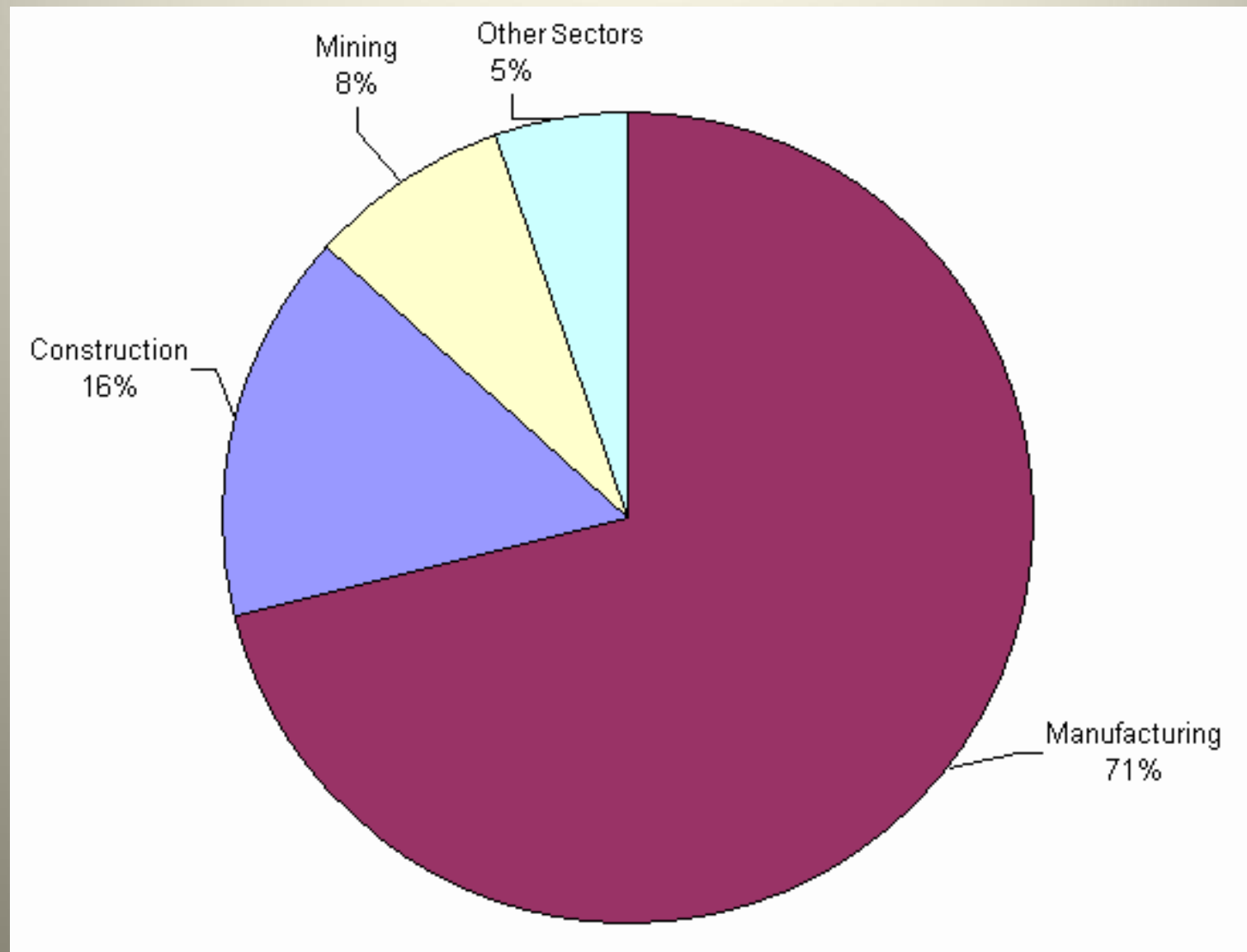
Surveillance



ABLES / CLPPPs



Exposure



LEAD RELATED OCCUPATIONS AND INDUSTRIES

Ammunition/explosives production
Automotive repair shops
Battery manufacturing and recycling
Brass, bronze, copper or lead foundries
Bridge, tunnel and elevated highway/subway construction
Cable/wire stripping, splicing or production
Ceramic manufacturing
Firing range work / Occupations using firearms
Glass recycling, stained glass and glass manufacturing
Home renovation/restoration (including lead abatement)
Lead production or smelting
Machining or grinding lead alloys
Manufacturing and installation of plumbing components
Manufacturing of industrial machinery and equipment
Metal scrap yards and other recycling operations
Motor vehicle parts and accessories
Plastics manufacturing
Pottery making
Production and use of chemical preparations
Rubber manufacturing
Sandblasting, sanding, scraping, burning or disturbing lead paint
Use of lead based paints
Welding or torch-cutting painted metal

LEAD RELATED HOBBIES AND ACTIVITIES

Making stained glass and painting on stained glass
Copper Enameling
Bronze Casting
Making pottery and ceramic ware with lead glazes and paints
Casting ammunition, fishing weights or lead figurines
Collecting, painting or playing games with lead figurines
Jewelry making with lead solder
Electronics with lead solder
Furniture refinishing
Glassblowing with leaded glass
Print making and other fine arts
Liquor distillation
Hunting and target shooting
Remodeling/renovating homes built before 1978

OSHA Standards



Lead Toxicity Signs & Symptoms

Mild

Myalgias
Irritability
Paresthesias
Mild fatigue
Intermittent
Abdominal pain
Lethargy

Moderate

Headache
Tremor
Vomiting
General fatigue
Diffuse abdominal
pain
Weight loss
Loss of libido
Constipation

Severe

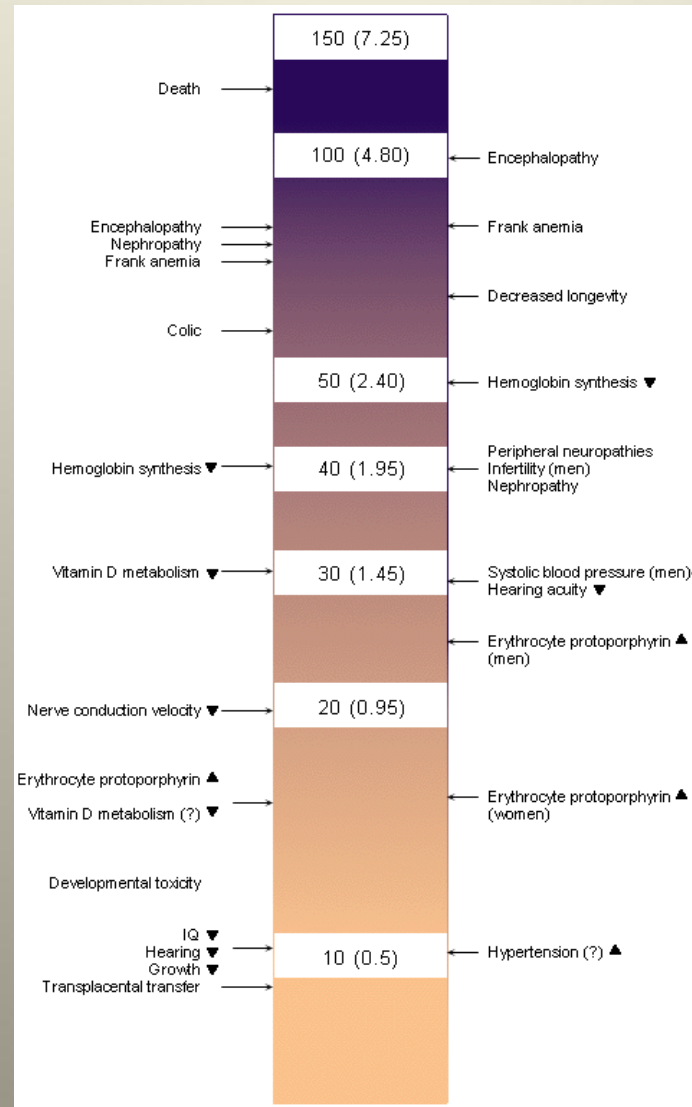
Encephalopathy
Motor neuropathy
Seizures
Coma
Abdominal colic
Lead lines
Oliguria

Adverse Effects of Exposure

Lead concentration in blood,
 $\mu\text{g per dL}$ ($\mu\text{mol per L}$)

Children

Adults



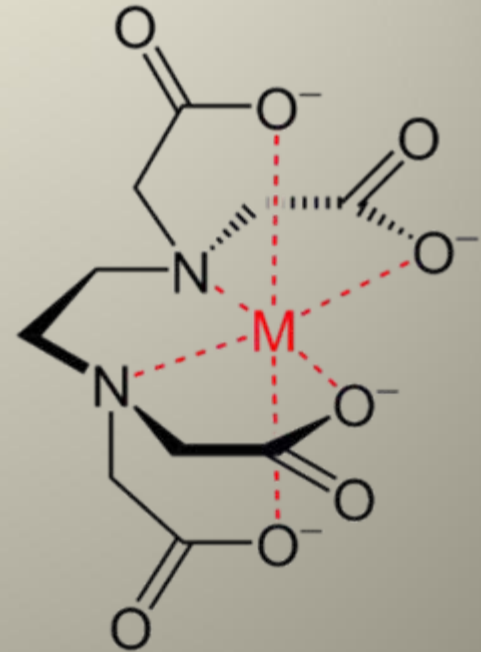
Adverse Effects, cont'd.

- Nephropathy, gout
- Intellectual/mental impairment
- Sensory impairment
- Skeletal/muscular changes
- Reproductive function impairment



Treatment

- Eliminate exposure
- Chelation
 - EDTA
 - Effective at higher toxicity levels
 - Requires hospitalization
 - Potential for renal damage
 - Succimer
 - Can be given orally at home
 - Unpleasant taste/smell
 - May upset GI tract



Prevention

Engineering controls

Isolation via containment structure

Ventilation via local exhaust system

Personal protective equipment

Respirator utilization



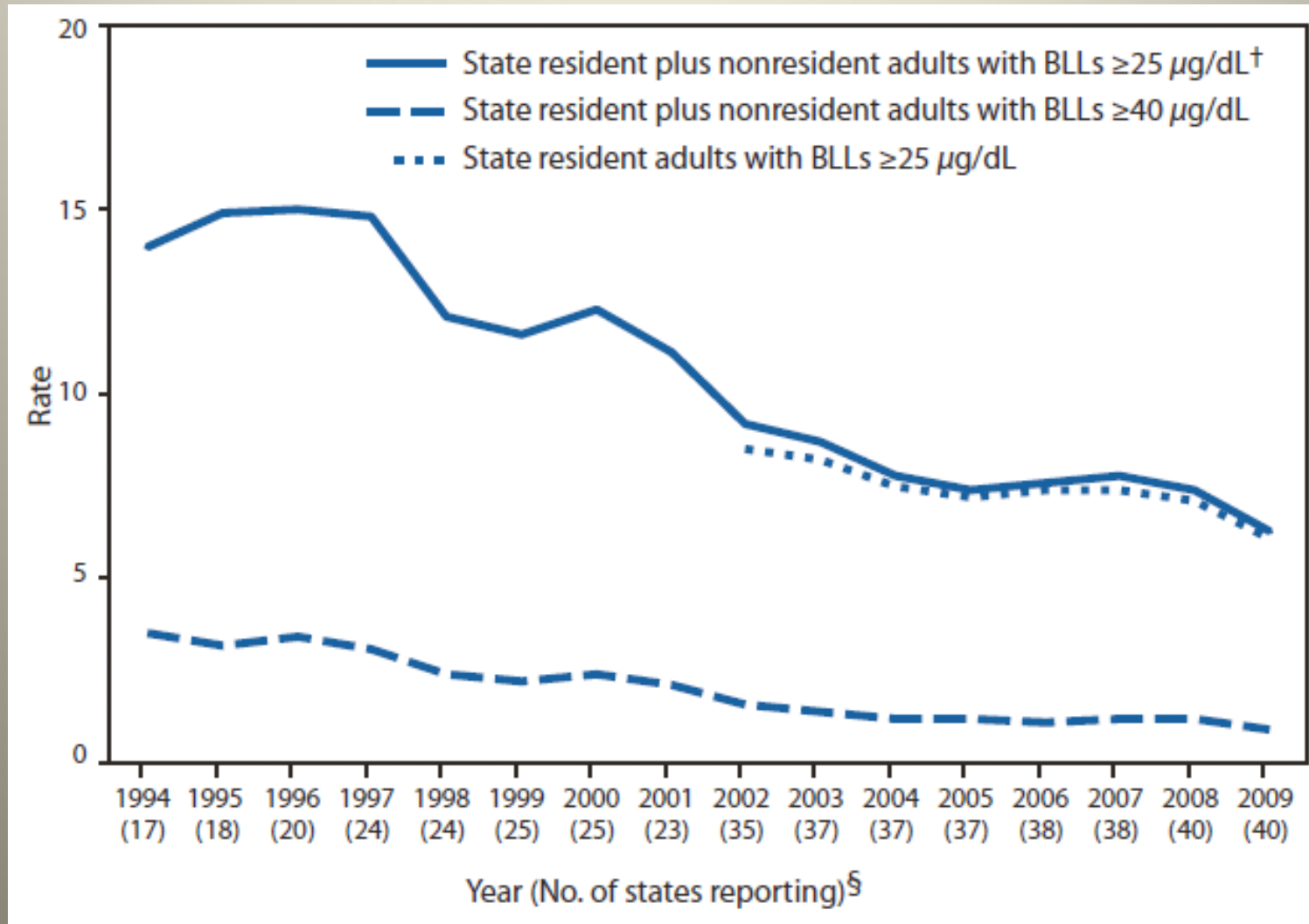
Work practices

Housekeeping activities to remove lead dust

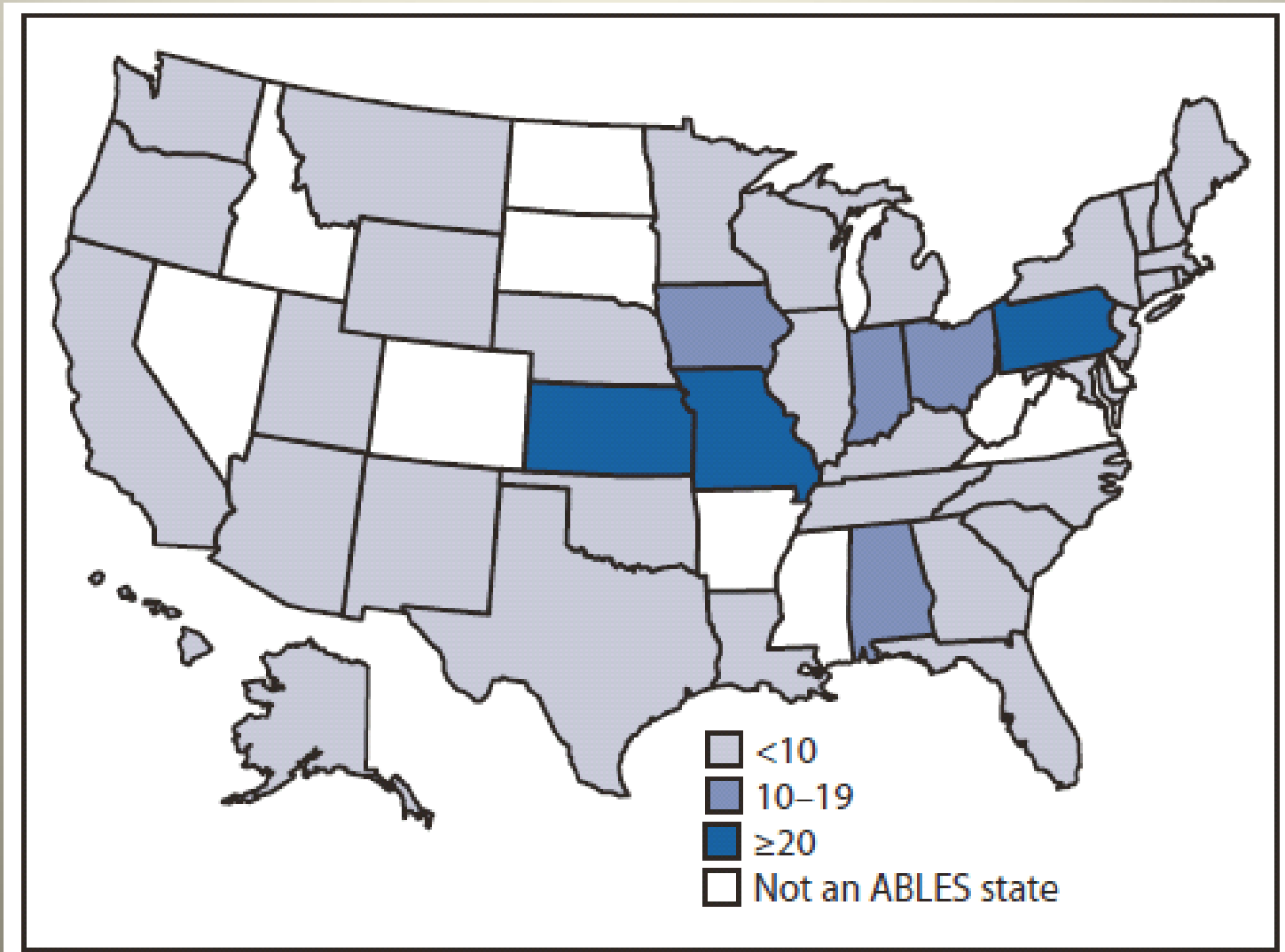
Personal hygiene practices

Periodic inspection/maintenance of control equipment

Adult EBLL Prevalence 1994 - 2009



High Adult EBLL Prevalence 2009



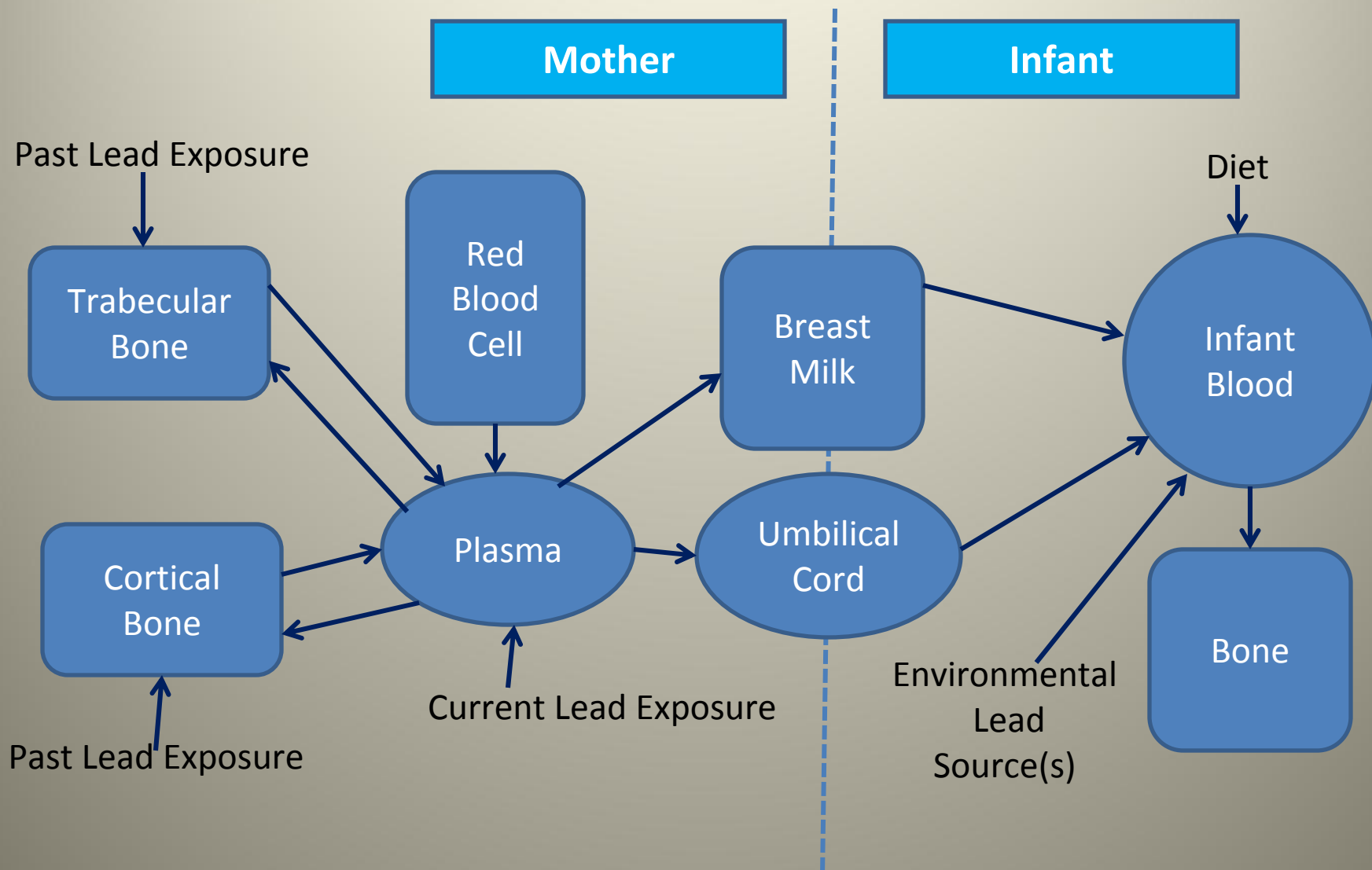
Indiana Adult EBLLs



LEAD AND PREGNANCY



Pregnancy → Fetal Pb Exposure



Key Points

- No single test available to assess total body lead burden
- Lead accumulates in hard tissue – e.g., bones, teeth
- Primary prevention key to reducing fetal exposure
- Lead can be found in breast milk



Risk Factors for Exposure

- Recent immigration from or residency in areas where ambient lead contamination is high
- Living near a point source of lead
- Working with lead or living with someone who works with lead
- Using lead-glazed ceramic pottery
- Eating nonfood substances (pica)



Risk Factors for Exposure

- Using alternative or complementary medicines, herbs, or therapies
- Using imported cosmetics or certain food products



Risk Factors for Exposure

- Engaging in certain high-risk hobbies or recreational activities
- Renovating or remodeling older homes without lead hazard controls in place
- Consumption of lead-contaminated drinking water



Risk Factors for Exposure

- Having a history of previous lead exposure or evidence of elevated body burden of lead
- Living with someone identified with an elevated lead level



Lead Exposure Assessment Tool:

New York City Department of Health

1. Were you born, or have you spent any time, outside of the United States?
2. During the past 12 months, did you use any imported health remedies, spices, foods, ceramics, or cosmetics?
3. At any time during your pregnancy, did you eat, chew on, or mouth nonfood items such as clay, crushed pottery, soil, or paint chips?
4. In the last 12 months, has there been any renovation or repair work in your home or apartment building?
5. Have you ever had a job or hobby that involved possible lead exposure, such as home renovation or working with glass, ceramics, or jewelry?

Lead Exposure Assessment Tool:

Minnesota Department of Health

1. Do you or others in your household have an occupation that involves lead exposure?
2. Sometimes pregnant women have the urge to eat things that are not food, such as clay, soil, plaster, or paint chips. Do you ever eat any of these things—even accidentally?
3. Do you live in a house built before 1978 with ongoing renovations that generate a lot of dust (for example, sanding and scraping)?
4. To your knowledge, has your home been tested for lead in the water and if so, were you told that the level was high?
5. Do you use any traditional folk remedies or cosmetics that are not sold in a regular drug store or are homemade?
6. Do you or others in your household have any hobbies or activities likely to cause lead exposure?
7. Do you use non-commercially prepared pottery or leaded crystal?

CDC Testing Recommendations

- Providers that serve at-risk populations should routinely test pregnant women
- In low risk areas, providers should evaluate other exposure risk factors as part of comprehensive assessment
- Blood lead testing should be done at earliest contact (when indicated)



CDC Follow-up Recommendations

- Pregnant women with blood lead level $\geq 5\mu\text{g}/\text{dL}$
- Infants with blood lead level $\geq 5\mu\text{g}/\text{dL}$
- Include results in medical records



Maternal Follow-up Schedule

Initial BLL ($\mu\text{g}/\text{dL}$)	When to Perform Follow-up Testing
<5	No follow-up testing indicated
5 - 14	Within 1 month – obtain a maternal BLL or cord BLL at delivery
25 – 44	Within 1 month and then every 2 – 3 months – obtain a maternal BLL or cord BLL at delivery
≥ 45	Within 24 hours and then at frequent intervals based on trend in BLLs – obtain a maternal BLL or cord BLL at delivery – consultation strongly advised

Neonate Follow-up Schedule

Initial BLL ($\mu\text{g}/\text{dL}$)	When to Perform Follow-up Testing
<5	According to lead screening guidelines
5 - 24	Within 1 month (at 1 st newborn visit)
25 – 44	Within 2 weeks – consultation strongly advised
\geq 45	Within 24 hours and then at frequent intervals based on trend in BLLs – consultation strongly advised

Infant <6 Month Follow-up Schedule

Initial BLL (µg/dL)	When to Perform Follow-up Testing	Later Follow-up Testing
<10	According to lead screening guidelines	According to lead screening guidelines
10 - 14	3 months	Within 6 – 9 months
15 – 19	1 – 3 months	Within 3 – 6 months
20 - 24	1 – 3 months	Within 1 – 3 months
25 - 44	2 weeks – 1 month	Within 1 month
>= 45	Within 24 hours	As directed by clinician

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CDC Recommendations for Healthcare Management of Pregnant Women

Prenatal
blood lead
levels
 $\geq 5 \mu\text{g}/\text{dL}$

- Determine source(s) of lead exposure
- Assess nutritional status
- Perform follow-up blood testing
- Review safety standards and reduce exposure for occupationally exposed women
- Encourage breastfeeding using CDC guidelines

CDC Recommendations for Healthcare Management of Pregnant Women

Prenatal
blood lead
levels

10 - 14 $\mu\text{g}/\text{dL}$

- Continue all of previous program AND
- Notify LHD if blood lead levels $\geq 10 \mu\text{g}/\text{dL}$ not reported by laboratory
- Eliminate exposure for occupationally exposed women

CDC Recommendations for Healthcare Management of Pregnant Women

Prenatal blood
lead levels

15 - 44 $\mu\text{g}/\text{dL}$

- Continue all of previous program AND
- Support environmental risk assessment and case management

CDC Recommendations for Healthcare Management of Pregnant Women

Prenatal
blood lead
levels
 $\geq 45 \mu\text{g}/\text{dL}$

- Continue all of previous program AND
- Treat as high risk pregnancy



Initial Breastfeeding Recommendations

- Mothers with blood lead levels $< 40\mu\text{g}/\text{dL}$ should breastfeed
- Mothers with blood lead levels $\geq 40\mu\text{g}/\text{dL}$ should initiate breastfeeding when level drops below $40\mu\text{g}/\text{dL}$



Breastfeeding Continuation Recommendations

- For infants whose blood lead levels are rising, or failing to decline by 5 $\mu\text{g}/\text{dL}$ or more, environmental exposure should be evaluated
- If no external source is identified, and maternal BLLs are $> 20 \mu\text{g}/\text{dL}$ and infant BLL $\geq 5 \mu\text{g}/\text{dL}$, breast milk should be suspected as the source
- Temporary interruption of breastfeeding until maternal blood lead levels decline should be considered

QUESTIONS ?????

Source:

Guidelines for the Identification and
Management of Lead Exposure in Pregnant and
Lactating Women

Available online at

<http://www.cdc.gov/nceh/lead/publications/LeadandPregnancy2010.pdf>