

# Healthy Homes, Healthy Families Sacramento Summit

## Government Resources and Policy Opportunities in Public Health

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Childhood Lead Poisoning  
Prevention Branch



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# Healthy Homes, Healthy Families



Includes Issues that  
Span Many Major  
Areas of Public  
Health

# National Level- DHHS Healthy People 2010

Objectives include addressing:

Substandard housing

Safe drinking water

Indoor allergens

Air quality

Lead exposure

Other heavy metals

Pesticides



# National Level - Centers for Disease Control and Prevention

Office of Strategy and Innovation Objectives  
address Healthy Homes and Communities, to  
promote:

Healthy, safe, accessible and available homes

Healthy and safe behaviors in homes and communities

Safe water, air, food, and waste disposal

Prevention of injuries and toxins in communities

Environments that encourage quality of life and social connectedness

# State Level – California Department of Public Health

Core Activities in California Department of  
Public Health (CDPH) Strategic Plan include:

Promoting healthy lifestyles for individuals and families in their communities and workplaces

Protecting the public from unhealthy and unsafe environments



# State Level - CDPH

Many individual CDPH Programs support and assure healthy homes, healthy environments and health promotion for families:

Descriptions of these programs, contact information, and the resources and services they provide can be found at CDPH website

[http:// www.cdph.ca.gov](http://www.cdph.ca.gov)



# State Level- CDPH

Examples are CDPH Programs in the divisions of :  
Drinking Water and Environmental Management  
Food, Drug, and Radiation Safety  
Environmental and Occupational Disease Control

Programs include:

Indoor air quality- mold assessment, radon testing, tobacco smoke;

Asthma issues - California Breathing;

Lead poisoning prevention;

Occupational exposures – including lead

# Lead Poisoning Prevention Activities to Achieve Healthy Families in Healthy Homes

Childhood Lead Poisoning  
Prevention (CLPP) Branch

Example of Public Health  
Program Resources, Functions,  
Services



# Major Sources of Environmental Lead in California



Third state in U.S. for largest number of old housing units, with potential exposure to lead in paint, soil and dust

Over 8.6 million pre-1980 units

Restrictions on lead in paint in 1978, gasoline in early 1990s

~1.3 billion pounds lead from gasoline and 200 million from paint in California 1929-1986



Why Do We Care About Lead  
in and Around the Home  
Environment and Lead  
Exposure to Families?

# Adverse Effects of Lead on Children

Blood lead levels in micrograms per deciliter:

100- 150	Death
50- 100	Encephalopathy, Nephropathy, Anemia
20- 50	Effects on nerve conduction, hemoglobin, Vitamin D
10- 20	Developmental effects- IQ, hearing, learning (subclinical, need to test)
< 10	Increasing awareness of problems, e.g. IQ deficit, ADHD, puberty delay (10 is defined as elevated blood lead)

# Adverse Effects at Low Levels



Adverse effects of lead are being identified at levels previously thought low

CDC Work Group: “the overall weight of available evidence supports an inverse association between blood lead levels < 10  $\mu\text{g}/\text{dL}$  and the cognitive function of children.”

*Preventing Lead Poisoning in Young Children, CDC, 2005*

# Lead Effects in Adults



Death from all Causes: NHANES III 1988-1994, those  $\geq 40$  years of age at baseline with blood lead value taken ( $n=9,757$ ); median follow-up 8.6 years. Relative Risk of mortality 1.59 (95% CI 1.28-1.98) for blood lead  $\geq 10$  and 1.29 (1.05-1.48) for 5-9 vs.  $< 5$   $\mu\text{g}/\text{dL}$ . RR similarly increased for death from cancer and cardiovascular disease. Schober. *Env Health Perspect* 2006;114:1538-1541

# Overall California Goal on Lead



Since no safe lower level of lead is known, goal is to achieve blood lead levels (BLLs) in the overall population that are as low as possible, with emphasis on: preventing exposure, reducing prevalence of children with elevated BLLs (EBLLs,  $\geq 10$  mcg/ dL), and reducing prevalence of children with evidence of above usual exposure (CDPH strategic objective)

# State Level- CDPH

## CDPH Strategic Plan Objective 4:

Increase (improve) by an average of 10 % California's performance on prioritized Healthy People Goals by 6/30/10

Decrease the percentage of children found to have elevated blood lead levels

**What is Being Done to  
Reduce Lead Exposure?**

# Efforts to Reduce Lead Exposure and Effects of Lead

Prevention of exposure – increasing knowledge of families, industry, workers, healthcare and childcare providers on lead issues, find and inform on sources, promote safe products and practices

Testing for lead – to identify areas and populations at risk, identify those exposed

Services to exposed – health & environmental

Correction – remove/ reduce lead sources



# Activities are Collaborations

Childhood Lead Poisoning  
Prevention (CLPP) Branch  
45 contracted CLPP programs  
in local jurisdictions around  
California (& non-contracted)  
Partnering agencies and  
programs

# Prevention of Exposure: Paint, Dust, Soil



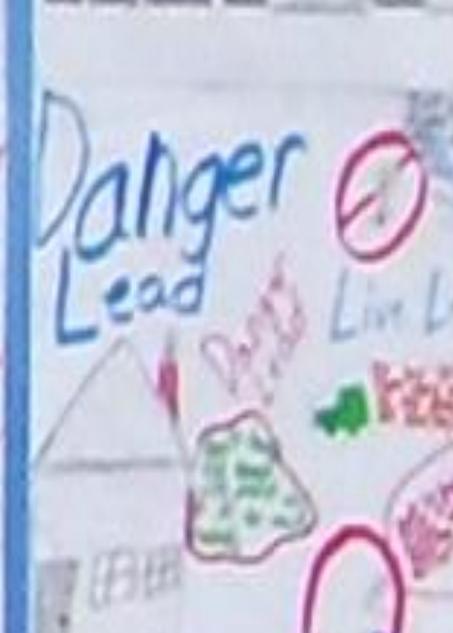
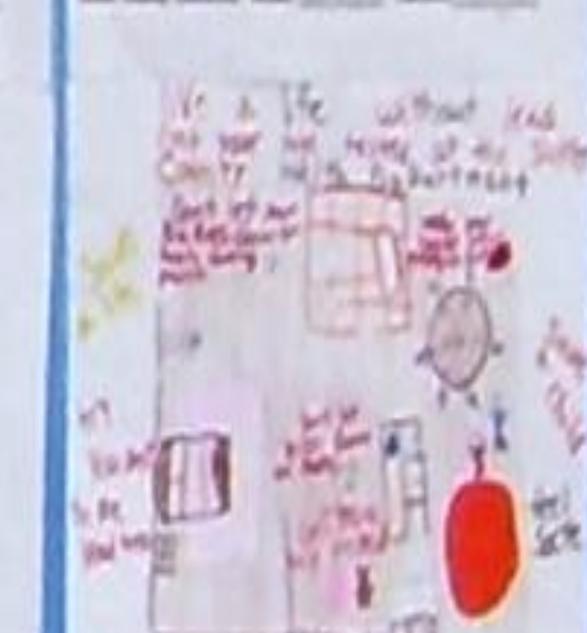
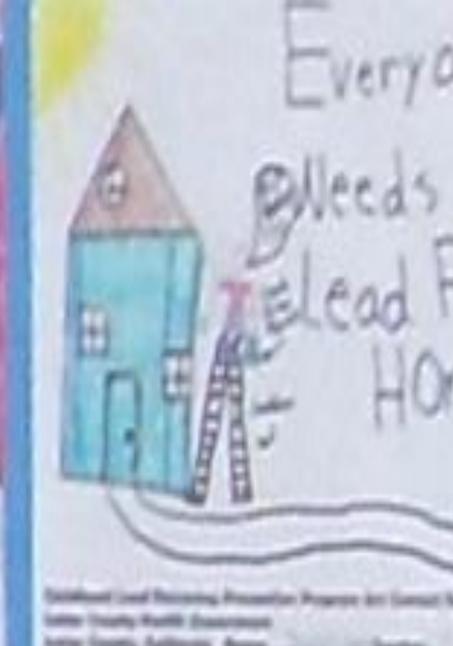
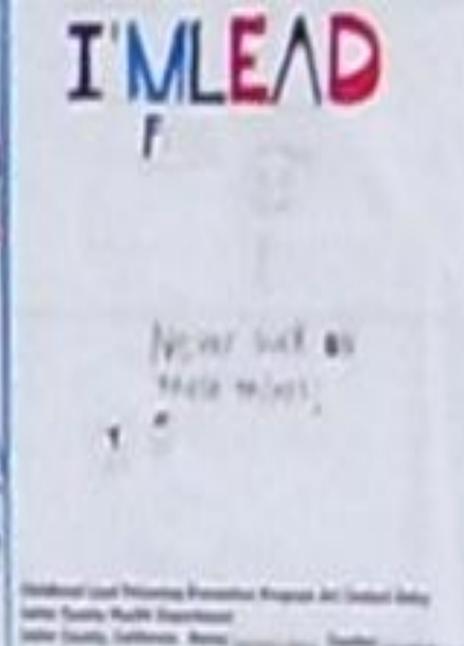
Public informing: materials and outreach activities on sources of lead - ~ 1,800 community events and 600 events for health care providers; reached over 1,200 child care providers and 300 hardware stores; 150 media spots/ads (first half 2008)



example: interactive, county calendar project in schools (bilingual)



new CLPP Branch website, expanded materials and materials in Spanish



# Prevention of Exposure: Paint, Dust, Soil

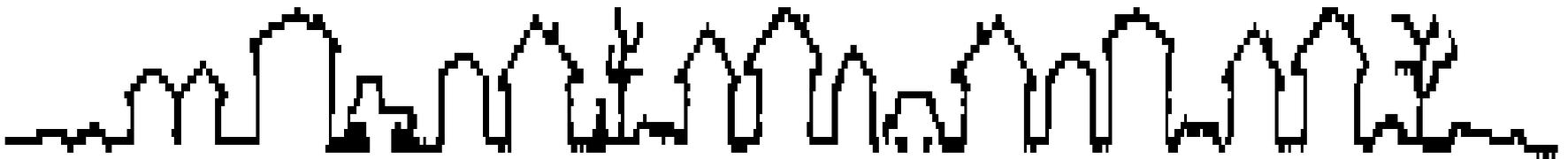
Informing on lead hazards and safe work practices  
(2008): Over 6,500 individuals trained and certified through Lead Related Construction Program in various disciplines/ year, 36 % classes in Spanish; plus 20 events for professionals and ~ 1,600 reached on hazards and codes



# Prevention of Exposure: Paint, Dust, Soil

New Regulations, April 2008:

On lead hazards in residential and public structures and surroundings - lowered allowed lead dust standards, and created sampling technician to increase accessibility of trained individuals



# Prevention of Exposure: Other Sources



Public and program informing (products/ behaviors):

Activities as for paint/dust/soil

Multiple state alerts on candies testing high for lead (Food and Drug & Food and Drug Laboratory Branch)

Outreach materials distributed on lead in pottery (Border Health)





# Prevention of Exposure: Other Sources

## Identification of sources:

Exploring new screening methods for products- XRF users workgroup (US Food and Drug, Department of Toxic Substances Control, CA Attorney General)

Local jurisdictions



# Testing for Lead to Identify Area and Population Risk and Exposure

CA testing focus: young, low-income children:

Screening (testing of blood lead) required by regulation in those age 1 and 2 years, in government assisted programs, and up to age 6 years, if not tested at 1 and 2

Medi-Cal, Child Health and Disability Prevention (CHDP), Special Supplemental Nutrition Program for Women, Infants and Children (WIC)

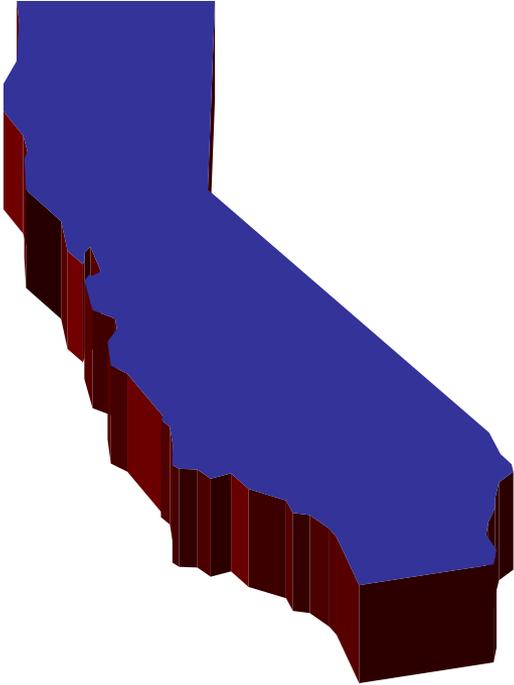
# Testing for Lead

If not in government assisted programs, tested, if live in pre-1978 deteriorated or recently renovated housing or housing age is not known

Other children tested, if believed at risk (any age); services to age 21

Anticipatory guidance 6-72 mos

Laboratory reporting required 2003; electronic 2005





# Testing Shows Prevalence of EBLs is Decreasing



Statewide in 2008, with >700,000 children tested, less than 0.5% had EBLs

Number of children identified with an EBL was 3,067

(In contrast in 2006, 0.7% or 4,396 EBLs)

# Testing Indicates Prevalence of EBLs is Decreasing

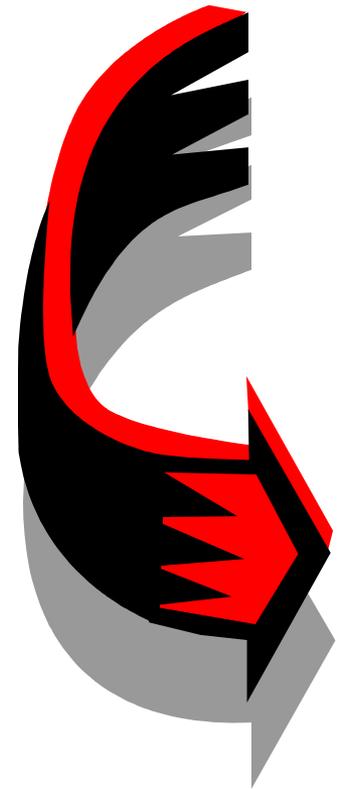
- Sacramento, Department of Health Services study, 1988-1990 (381 measurements in children age 1-5 years in areas with low income, older housing, minority population), 14 % with elevated blood lead levels (EBLLs) *Bradman Env Health Perspectives 2001;109:1079*
- Santa Clara, 1991-1992 (3,630 children 6 to 72 months tested in public clinics), 6 % has EBLs *Snyder Pediatrics 1995;96:643-648*

# Prevalence of BLLs $\geq 5 \mu\text{g/dL}$

In NHANES III (1988-1994),  
26 % of children age 1-5  
years had blood lead levels  
 $\geq 5 \mu\text{g/dL}$

In 2006, California state-wide  
blood test values found 6 %  
were  $\geq 5 \mu\text{g/dL}$

Represented 38,000 children



# Test Results Allowing Us to Identify Areas of Current Risk for Targeting – County and Below



# Numbers of Children With Highest Levels of Lead Are Decreasing



Children with persistent lead values of  $15\mu\text{g}/\text{dL}$  or reaching  $20\mu\text{g}/\text{dL}$  are “cases”

Cases receive additional public health nursing services and environmental investigations

1993- 1996 about 1,400- 1,600 cases per year

Since 2006, < 700 cases/ year

# Services Provided to Cases

Public Health Nursing home visit by local CLPP program seeks information on behaviors and potential exposures; provides education and follow-up with family and health care provider

Environmental visit includes testing of home including paint, soil, dust, water, and looking for other sources



# Services Provided to Cases

97% new cases received nursing home visit first half of 2007; 96% received an environmental investigation

Follow-up for correction of any lead hazards found



# Lead Exposure in Cases

Analysis in 2005, of cases from 2000-2002

indicated that the most common sources of exposure identified in homes were lead in paint (66-85%) and lead in soil (32-70%), depending on level used to define exposure

Other potential exposures were

take home from parent's work (13%), home remedies (10%), hobbies (6%), pottery (3%), other (including candy, 9%)



# Lead Exposure in Cases

Investigations of cases indicate that there are a number of potential sources of lead exposure in and around homes and in daily life of cases

However, these investigations do not indicate how much of each potential source contributed to the blood lead level

Need to address and reduce exposures from all potential sources

# Services to Exposed Children Below Case Definition



Local program activities first half 2008 (as resources allow), graded management:

Blood lead levels  $10 \mu\text{g/dL}$  or greater - ~ 740 children received some services

Blood lead levels less than  $10 \mu\text{g/dL}$ - ~ 330 received some services

# Correction of Lead Hazards

Corrective actions are key:

24 local CLPP jurisdictions carrying out additional activities to be sure identified lead hazards are corrected and to stop exposure

Collaboration with federal and state agencies and programs to remove/ prevent multiple products with lead



# Summary Points

Lead has developmental effects, even at levels which do not cause overt symptoms

Blood lead levels are decreasing but there are still many children in California with increased blood lead levels

Testing still needed to identify risk and provide services as indicated

Prevention of exposure is essential

# Looking Forward to Increasing Collaboration on Lead Issues Through Healthy Homes and Healthy Families



Key Goal

# Childhood Lead Poisoning Prevention Branch website:

http: [www.cdph.ca.gov/programs/CLPPB](http://www.cdph.ca.gov/programs/CLPPB)

Information on local CLPP Programs  
and contact information





# Standards to Reduce Lead Exposure

Lead in paint- 600 ppm

Lead in soil in children's play areas- 400 ppm

Lead in dust (interior floor)- 40 mcg/sq ft

Lead in non-metallic children's jewelry-  
200 ppm after 8/31/09

Lead in packaging- 100 ppm for sum of 4 heavy metals

Lead in candy- 0.1 ppm

Lead in water- 15 ppb action level

Children's products (CPSC) paint/coatings 90 ppm 8/14/09

Accessible parts of consumer products for < 12yrs, 2/10/09  
600 ppm, 8/14/09 300 ppm, 8/14/11 100 ppm

# Lead Effects in Older Children

Attention Deficit Hyperactivity Disorder: Children 4-15 years association of higher blood lead levels with ADHD, as defined by medication and parent report (NHANES data 1999-2002). *Braun. Env Health Perspect, September 2006, on-line*

Delinquency: Higher bone lead in 12-18 year olds in Pennsylvania with delinquency convictions and blood lead associated with self-reported delinquent acts in Cincinnati *Env Health Perspect Vol 110, October 2002*

Puberty: Girls 8-18 years, increases in blood lead of one vs 3  $\mu\text{g}/\text{dL}$  delayed puberty (n=2,186) *Selevan. NEJM 2003;348:1527-1536*

# Adverse Effects of Lead at Low Blood Levels

## IQ Effects of Low Lead:

Children (n=101) followed from 6-60 months, with lead concentration below 10  $\mu\text{g}/\text{dL}$ , had change in IQ (7.4 IQ points for lifetime average increase in lead from 1 to 10  $\mu\text{g}/\text{dL}$  vs 2.5 IQ decrease between 10-30)

*Canfield NEJM 2003;348:1517-26*