

# Adverse Health Effects of Lead

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Chief, Healthy Homes and Lead Poisoning Prevention

July 9, 2012

National Center for Environmental Health

Division of Emergency and Environmental Health Services



# THE DUTCH BOY'S LEAD PARTY



*A Paint Book  
for  
Girls and Boys*

With which is bound  
**COLOR HARMONY IN THE HOME**  
A Booklet for the Grown-ups



# ASPINALL'S ENAMEL

SURPASSES ALL OTHERS  
AVOID IMITATION



THE FINEST COLORS  
IN THE WORLD

1837



SIXTY YEARS  
EVOLUTION  
IN DECORATIVE  
ART

IS NOT MADE  
WITH LEAD AND IS  
NON POISONOUS



COLOUR  
PERFECT

1897

PARIS. 24 RUE ALIBERT

NEW CROSS LONDON. S.E.

NEW YORK. 98/100 BERKMAN

# THE SUN



Wednesday, March 20, 2002

Baltimore, Maryland

50 cents

## INSIDE

O's rotation rounds into shape with Maduro likely to get No. 5 spot

Calvin Maduro appears to win the last spot in the Orioles' rotation when the team options Rick Bauer and Sean Dougllass to Triple-A Rochester. Maduro would join starting pitchers Scott Erickson, Jason Johnson, Sidney Ponson and Josh Towers. [Page 1A]

## Nation/World

Campaign finance vote likely today in Senate. [Page 3A]

Acting Mass. governor drops out of race. [Page 11A]

Opposition leader backs Zimbabwe strike. [Page 16A]

## Opinion

# Lead paint is old, but it's not history

■ **Poison:** A poignant case shows that city and state efforts to rid rental housing of lead paint are not protecting all children.

By HEATHER DEWAR  
SUN STAFF

When his family moved into their rented rowhouse in Northeast Baltimore last June, Cameron Roberts was

an active 1-year-old with a ready smile and a two-word vocabulary: "Mama" and "no."

Five months later, he lay in the intensive care ward at Kennedy Krieger Institute with a potentially lethal dose of lead in his bloodstream — poisoned, his family now believes, by dust and flakes from the lead-based paint that riddled his home.

A month's worth of painful injections probably saved the toddler's life, doctors say. But the lead, which lingers in

his system, left him in danger of lifelong difficulties with learning and behavior.

Now 21 months old, the dark-eyed child still speaks only two words. He rarely smiles.

"It breaks my heart," said Cameron's grandmother, Sonia Johnson of West Baltimore. "He screams, he falls out, he bangs his head against the floor. He's a sweet little child, but he just goes through changes, and you can see it's not his fault."

Tragedies like this aren't



KENNETH K. LAM: SUN STAFF

**Forever changed:** Medical treatment saved Cameron Roberts from death, but the lead damage cannot be reversed.

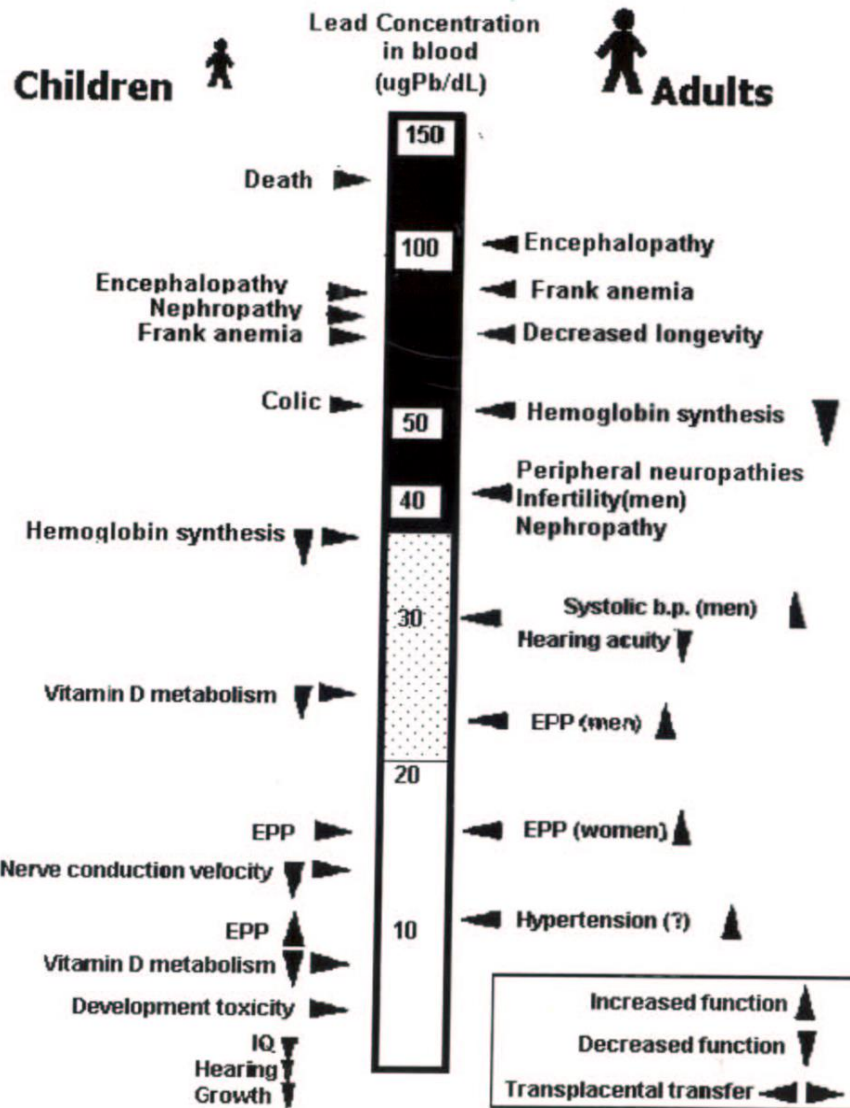
supposed to happen in Baltimore anymore.

Two years ago, city, state and federal officials launched a concerted campaign to end the childhood lead poisoning

that has been a scourge on Baltimore since the 1800s. They pledged to strengthen law enforcement and help landlords clean up the toxic lead paint. [See Lead, 12A]

# Cheney coaxes Arafat effort

U.S. offers meeting if Palestinian leader acts to end violence



Effects of inorganic lead on children and adults - lowest observable adverse health effects

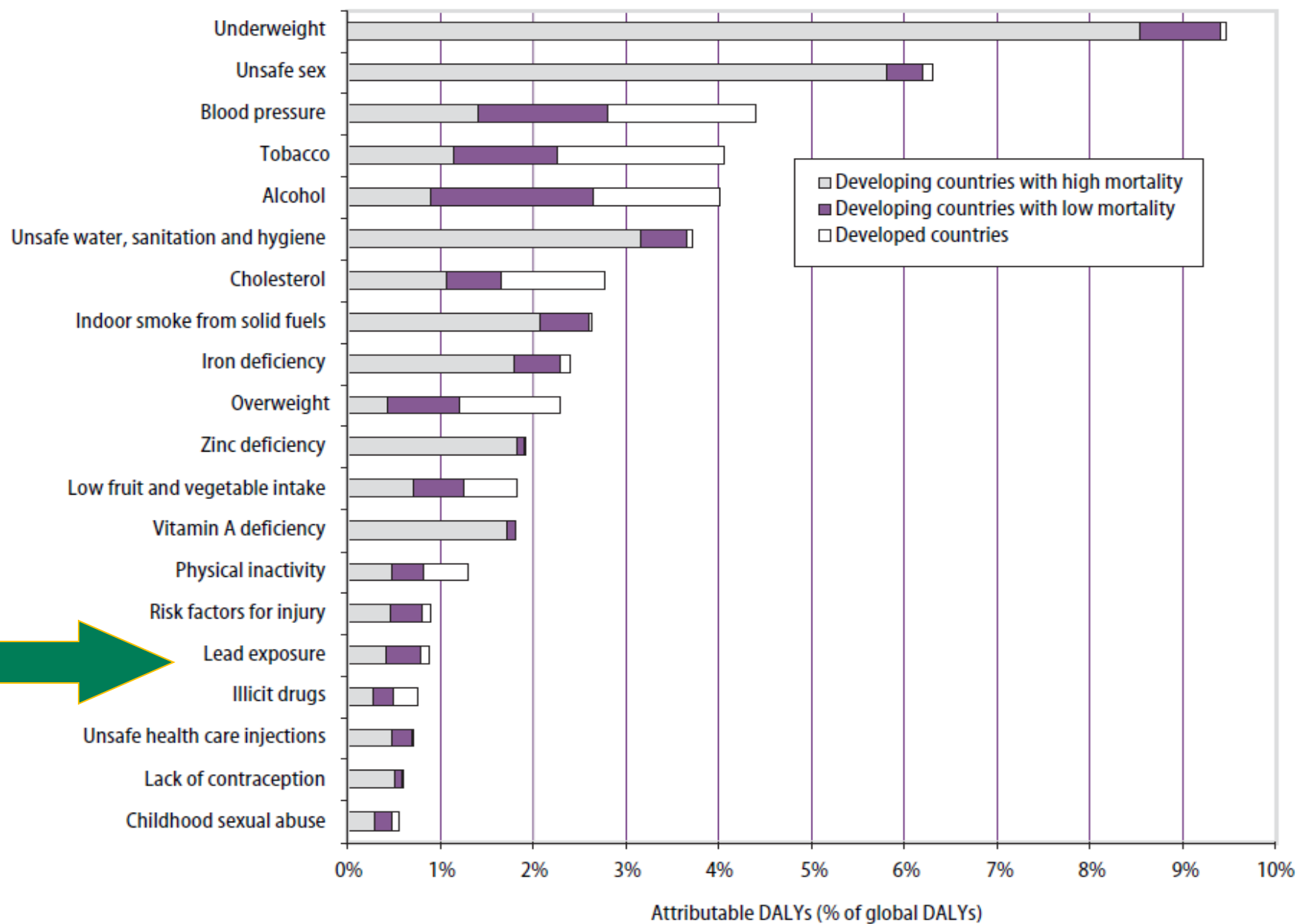
Source: ATSDR, 1992

# National Toxicology Program: Health Effects of Low Level Lead

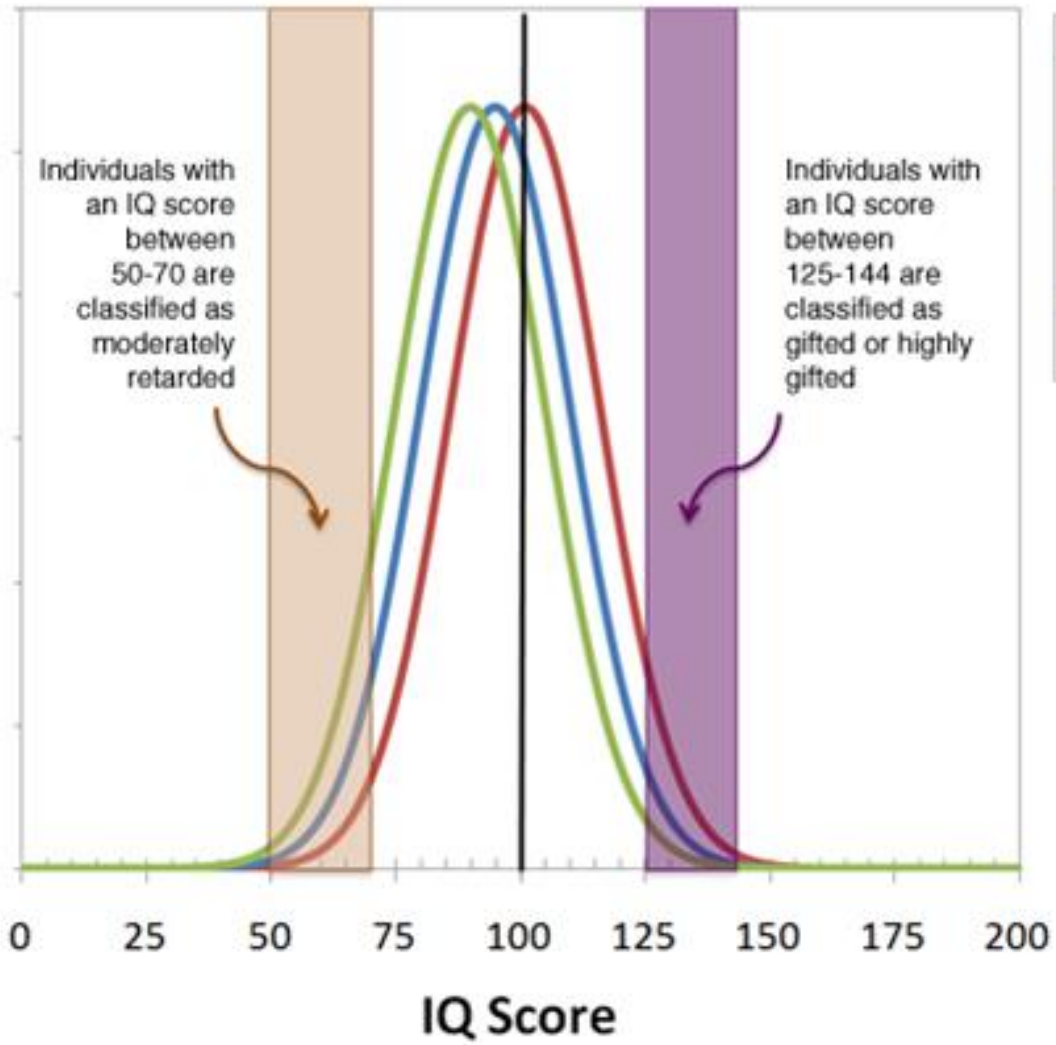
Table 1.1: NTP conclusions on health effects of low-level Pb by life stage

Life Stage	Blood Pb Level	NTP Conclusion	Principal Health Effects	Bone Pb Evidence
Children	<5 µg/dL	<i>Sufficient</i>	Decreased academic achievement, IQ, and specific cognitive measures; increased incidence of attention-related behaviors and problem behaviors	Tibia and dentin Pb are associated with attention-related behaviors, problem behaviors, and cognition.
		<i>Limited</i>	Delayed puberty and decreased kidney function in children ≥12 years of age	The one available study of bone Pb in children does not support an association with postnatal growth.
	<10 µg/dL	<i>Sufficient</i>	Delayed puberty, reduced postnatal growth, decreased IQ, and decreased hearing	No data
		<i>Limited</i>	Increased hypersensitivity/allergy by skin prick test to allergens and increased IgE* (not a health outcome)	No data
		<i>Inadequate</i>	Any age - asthma, eczema, nonallergy immune function, cardiovascular effects; <12 years of age - renal function	No data
Adults	<5 µg/dL	<i>Sufficient</i>	Decreased glomerular filtration rate; maternal blood Pb associated with reduced fetal growth	The one available study of bone Pb in the general population supports an association between bone Pb and decreased kidney function. Maternal bone Pb is associated with reduced fetal growth.
		<i>Limited</i>	Increased incidence of essential tremor	No data
	<10 µg/dL	<i>Sufficient</i>	Increased blood pressure, increased risk of hypertension, and increased incidence of essential tremor	The association between bone Pb and cardiovascular effects is more consistent than for blood Pb.
		<i>Limited</i>	Psychological effects, decreased cognitive function, decreased hearing, increased incidence of ALS, and increased cardiovascular-related mortality; maternal blood Pb associated with increased incidence of spontaneous abortion and preterm birth	The association between bone Pb and cognitive decline is more consistent than for blood Pb.
		<i>Inadequate</i>	Immune function, stillbirth, endocrine effects, birth defects, fertility or time to pregnancy**, and sperm parameters**	No data

Figure 4.9 Global distribution of burden of disease attributable to 20 leading selected risk factors



Percent of Population



- Normal Distribution
- Shift in Average of 5 IQ points
- Shift in Average of 10 IQ points



# Update on Health Focal Area Workplan Activities

Dr. Mary Jean Brown

Healthy Homes and Lead Poisoning Prevention Branch  
US Centers for Disease Control and Prevention

Dr. Archana Patel

Member of the International Pediatric Association Committee  
on Environmental Health

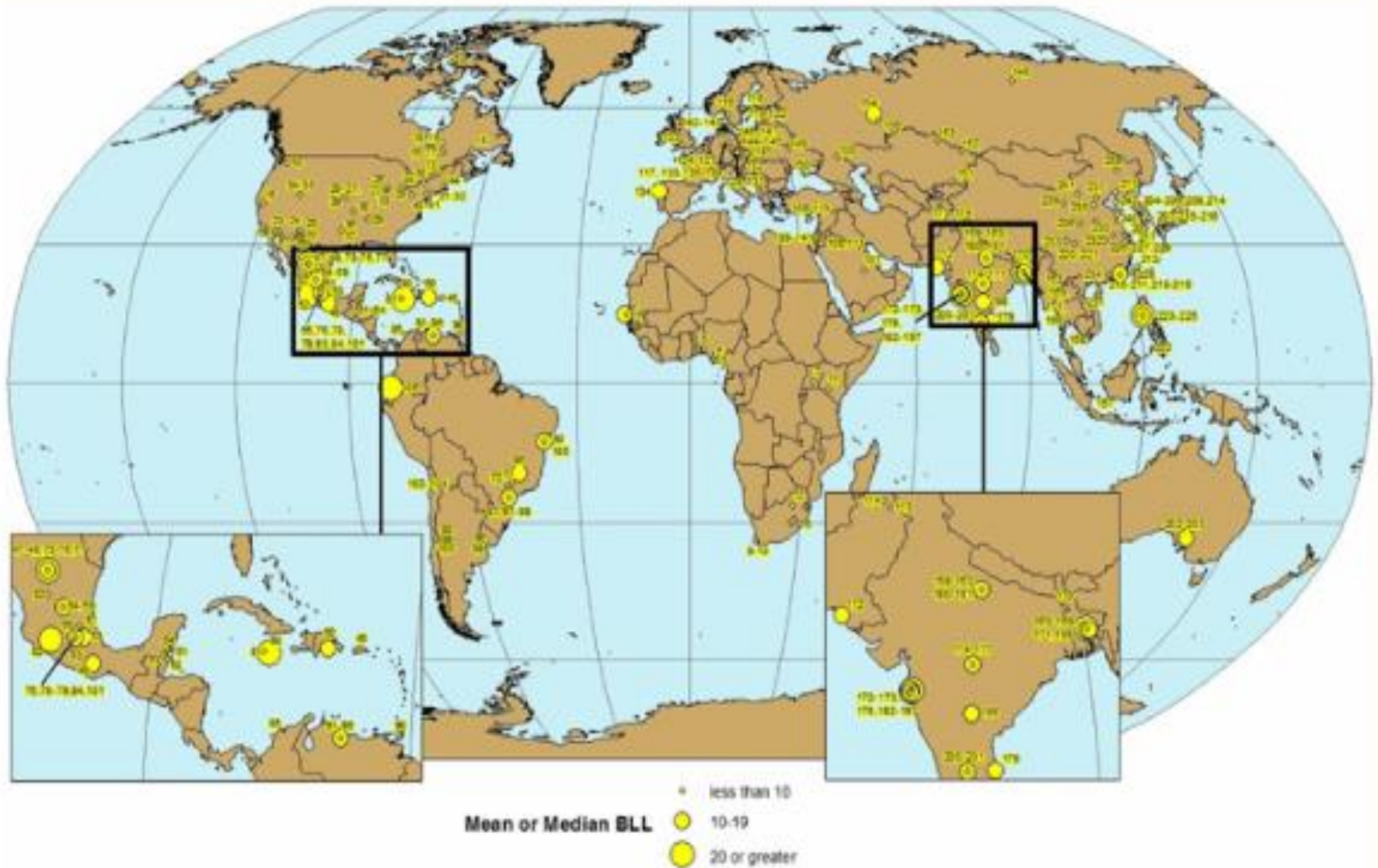
Professor and Head, Department of Pediatrics

Indira Gandhi Government Medical College, Nagpur

India

# Objectives of Health Focal Area

- Provide health rationale to industry, government, and other stakeholders to stimulate action and the development of legislation to eliminate the lead paints;
- Encourage health care providers/public health practitioners to take a leadership role in promoting the elimination of lead in paint;
- Build capacity in hazard assessment, lead poisoning prevention, blood lead measurement and surveillance, laboratory analysis, exposure assessment and exposure reduction by sharing information and leveraging the expertise and experience of Alliance members;
- Provide best practices to promote the public awareness of the hazard of lead paints.



# Update on Activities

- Contributions from World Health Organization
  - In 2010 a web-story on “Ten Chemicals of Public Health Concern” [http://www.who.int/ipcs/features/chemicals\\_concern/en/index.html](http://www.who.int/ipcs/features/chemicals_concern/en/index.html) drew attention to the importance of preventing lead exposure.
  - Information booklet about lead poisoning can be downloaded at <http://www.who.int/ipcs/features/lead.pdf>.
  - “Childhood Lead Poisoning” has been published to inform and educate health professionals (<http://www.who.int/entity/ceh/publications/leadguidance.pdf>).
  - Treatment protocols and advisor for management of outbreaks
  - Two leaflets, one on the analysis of lead in blood and the other on analysis of lead in paint, have been prepared for WHO member countries.

# Activities Update

- Enlist support/endorsement from key stakeholders
  - Workshop at the International Pediatric Association (IPA) Johannesburg August 2010
  - Updates on health research on lead poisoning is hosted on IPA website <http://www.ipa-world.org/page.php?id=329>
  - Side event at the OEWG at the ICCM for establishing contacts and mechanisms for working together to organize the First International Day of Action on Lead Poisoning
  - Building links with the International POPs Elimination Network and Toxics Link, some non-governmental organizations for raising awareness and producing advocacy materials

# Proposed Activities

- Continue to enlist support from key stakeholders
- Health Campaigns
- Blood lead testing guidelines
- Identify champions to augment awareness

# WHO Guidelines for Prevention and Management of Lead Poisoning

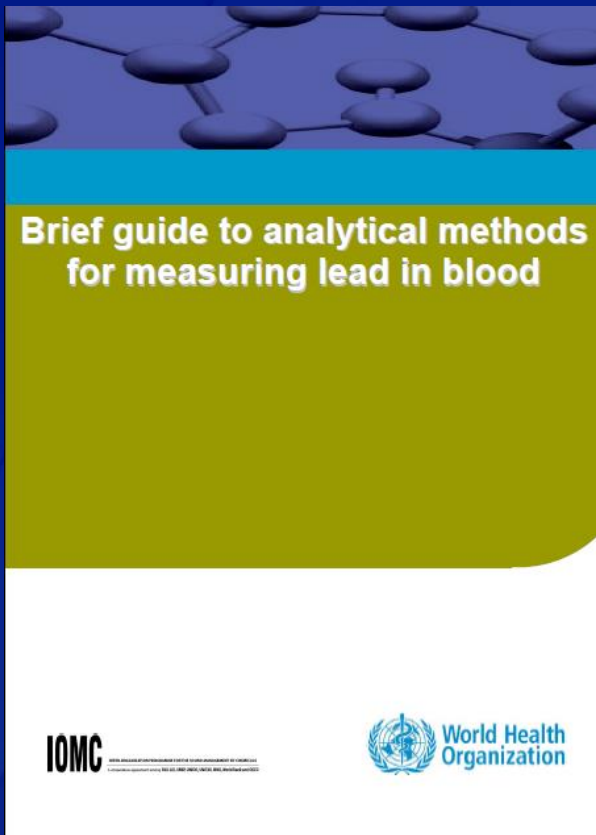
- Prevention section will include policy and practical interventions
  - e.g. elimination of non-essential uses of lead
  - remediation
  - Blood lead screening & surveillance
- Management section will include diagnostic methods, use of chelation and supportive therapies
- Estimated completion – late 2013

# WHO Guidelines for Prevention and Management of Lead Poisoning

- Aim to support decision-making and implementation of best practice for prevention of exposure to lead and diagnosis and treatment of lead poisoning
- Being developed according to WHO procedures
  - Systematic evidence reviews to support each intervention
  - International guideline development group representing different stakeholders
  - International peer review

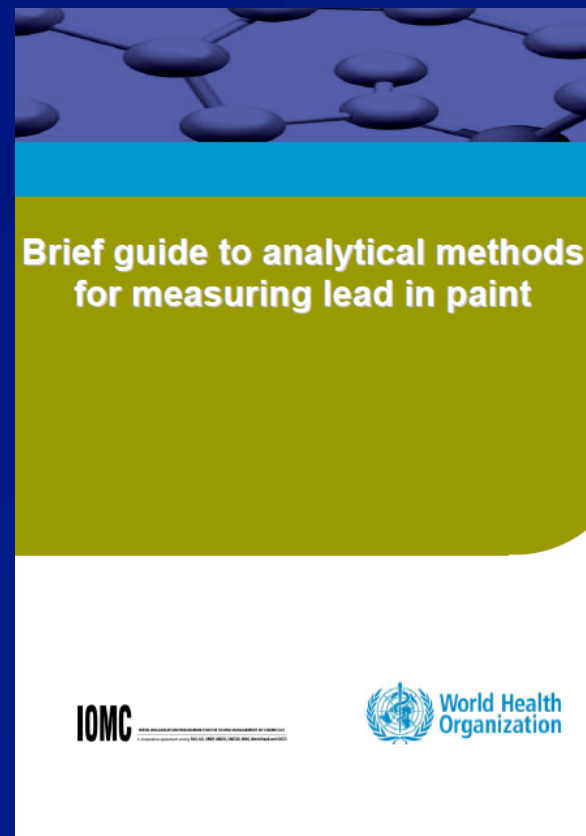






**Brief guide to analytical methods  
for measuring lead in blood**

**IOMC**  
INTERNATIONAL ORGANIZATION FOR METALLOGICAL CHEMISTRY  
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION  
INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY  
INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS

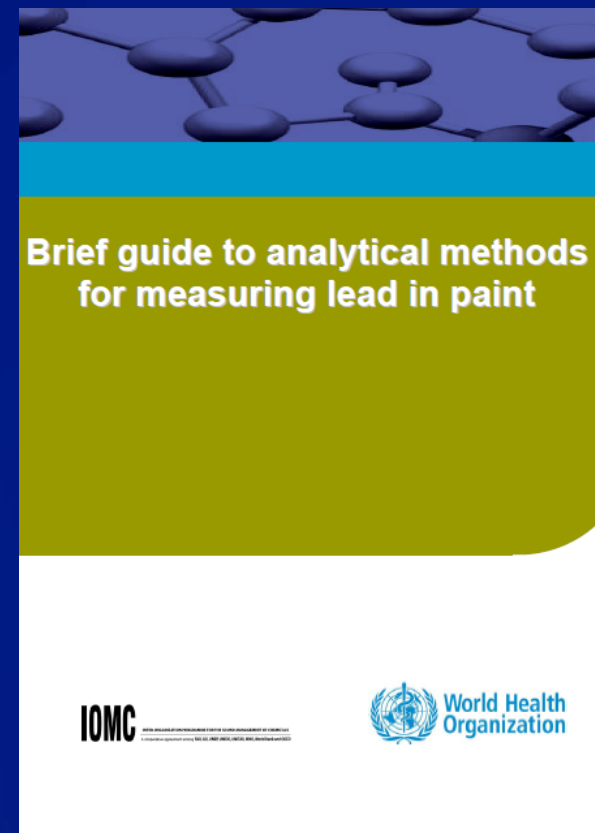
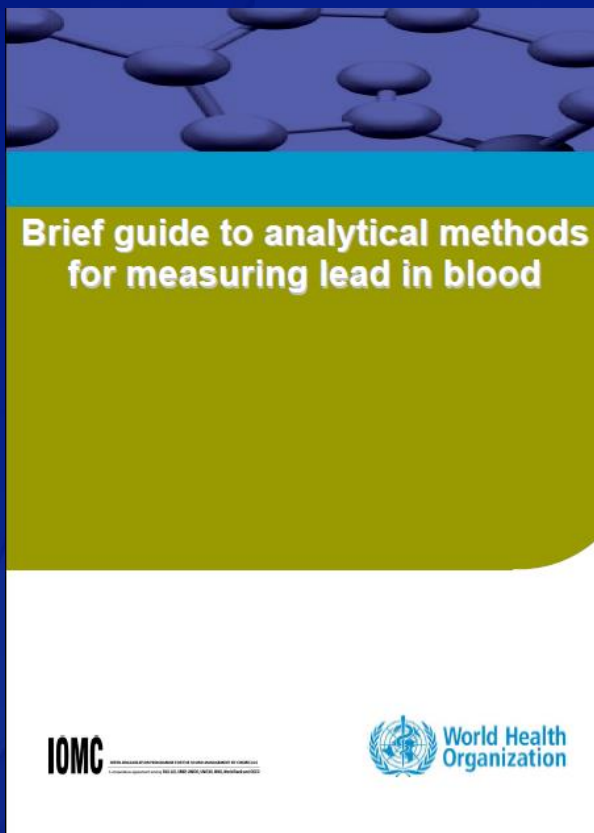


**Brief guide to analytical methods  
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INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS



# Clearing House



# Activities Update

- Contributions from USEPA and CDC
  - Guidelines for conducting National Lead Poisoning Prevention Day/Week of Action

Navigation bar of Windows Internet Explorer showing address bar (http://www.cdc.gov/nceh/lead/nlppw.htm), menu (File, Edit, View, Favorites, Tools, Help), and various utility icons.

- Calendar of Events
- National Lead Poisoning Prevention Week**
- Archived Materials
- CDC's Lead Program
- Data, Statistics, & Surveillance
- HSPH Program Evaluation Course
- Lead Recalls
- Partners
- Policy Resources
- Prevention Tips
- Publications
- Tools and Training

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# National Lead Poisoning Prevention Week

## October 23-29, 2011

*Lead-Free Kids for a Healthy Future*

### Contact Us:

- Centers for Disease Control and Prevention  
1600 Clifton Rd  
Atlanta, GA 30333
- 800-CDC-INFO  
(800-232-4636)  
TTY: (888) 232-6342
- [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)

### NLPPW Toolkit – Get the Word Out

- Posters and Flyers
- Sample Press Release
- Sample Newsletter Article
- Key Messages
- Widget
- Buttons and Badges
- Web Banners
- Training Tools
- Health-e-Cards
- Video PSAs
- Audio Podcasts
- More Resources

Today, childhood lead poisoning is considered the most preventable environmental disease.

**LEAD FREE KIDS**

for a healthy future

Get Your Home Tested    Get Your Child Tested    Get the Facts

1-800-424-LEAD (5323)    LEADFREEKIDS.ORG

[cdc.gov/nceh/lead](http://cdc.gov/nceh/lead)

[hud.gov/offices/lead](http://hud.gov/offices/lead)

[epa.gov/lead](http://epa.gov/lead)

Navigation bar for Windows Internet Explorer showing address, tabs, and menu options.

Address: <http://www.cdc.gov/nceh/lead/nlppw.htm>

Menu: File Edit View Favorites Tools Help

Buttons: Convert Select

Search: Live Search

Tabs: Employee Communications P... CDC - Lead - National Lea... X

Icons: Home RSS Mail Print Page Safety Tools

## Health-e-Cards

*Send your friends, family, and coworkers an electronic greeting card about lead poisoning prevention and safe, healthy homes.*

### Lead Poisoning Prevention



[Prevent Lead Poisoning](#)



[International Adoption](#)

### Healthy Homes



[Safe Home](#)



[Safe New Home](#)



[Healthy Home](#)



[Congrats on Your New Nest!](#)



**For more information please contact Centers for Disease Control and Prevention**

1600 Clifton Road NE, Atlanta, GA 30333

Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) Web: [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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