

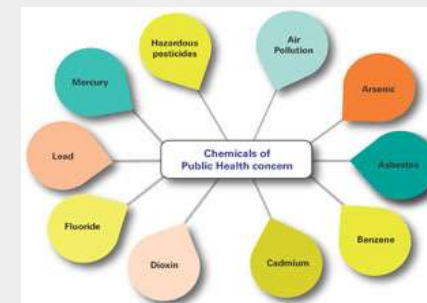
# EXPOSURE & HEALTH EFFECTS ASSOCIATED WITH LEAD PAINT IN SOUTH AFRICA



Angela Mathee | Environment & Health Research Unit  
[amathee@mrc.ac.za](mailto:amathee@mrc.ac.za) | 012 339 8539

# WHAT IS LEAD?

- Lead sources (batteries, petrol, paint [*homes, toys, playground equipment*], fishing sinkers, firearms, ammunition, toys, solder, electronic equipment, wheel balancing weights, cabling, protective gear, traditional medicines, low cost beverages, mobile phones, laptops, radio & TV sets, foodstuffs, cookware....)
- Very useful
- Toxic to virtually all organ systems
- Mimics calcium → cascade of health effects



# HEALTH EFFECTS OF LEAD

- Lowered IQ, school performance, tertiary attainment, lower lifetime earnings
- Hearing loss
- Anaemia, hypertension, cardiac disease, infertility
- Aggression, violent & criminal behavior;
- Soweto studies;

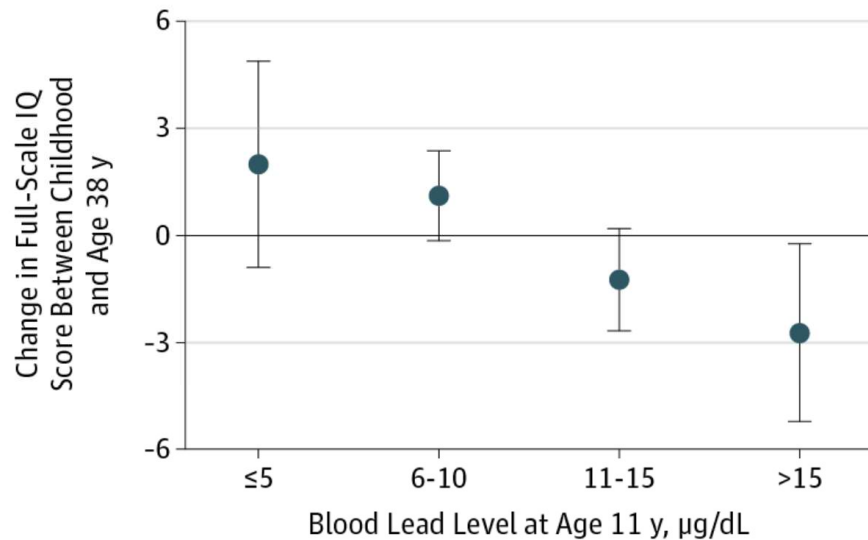


The Silent Epidemic | No threshold of safety



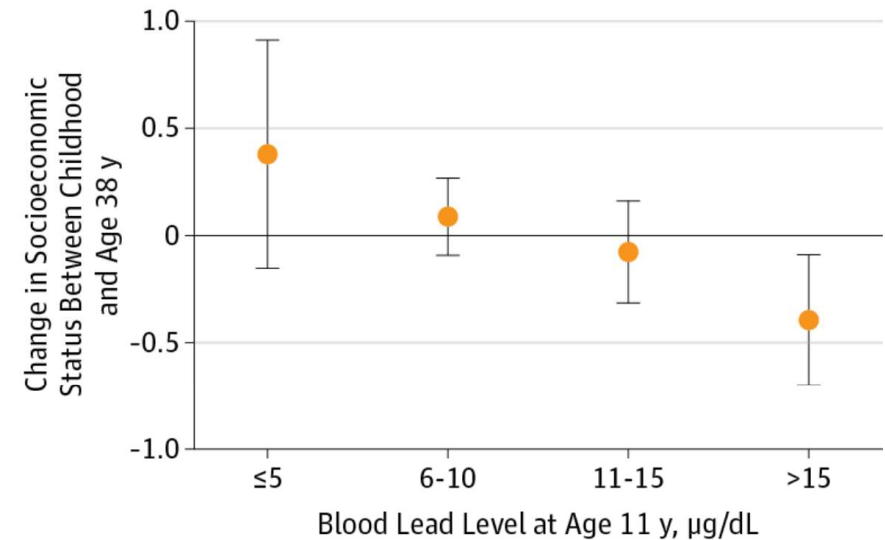
# LEAD POISONING, POVERTY & LEARNING ABILITY

**A** Change in full-scale IQ by childhood blood lead levels



No. of participants 31      260      168      74

**B** Change in socioeconomic status by childhood blood lead levels

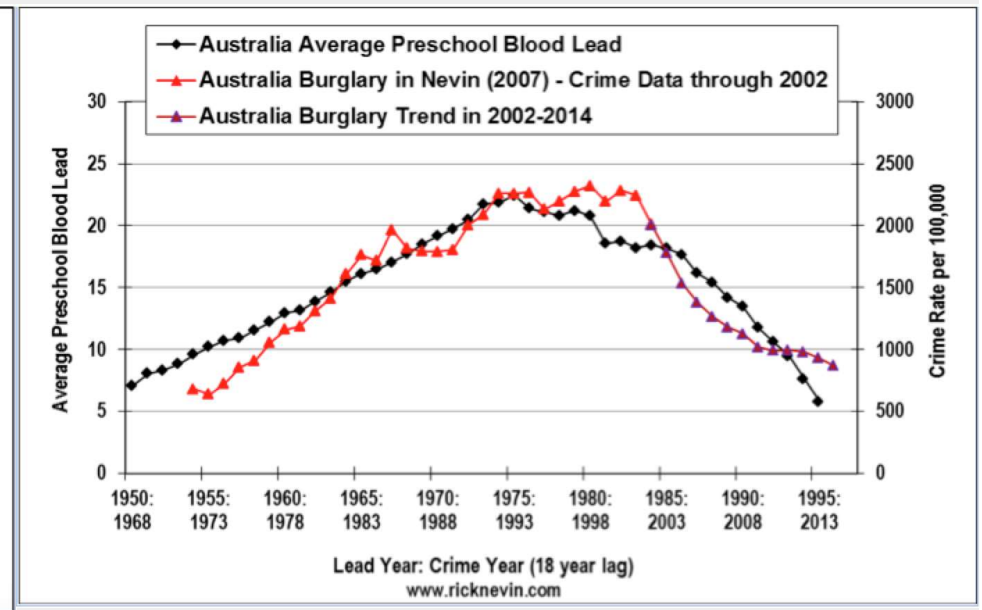
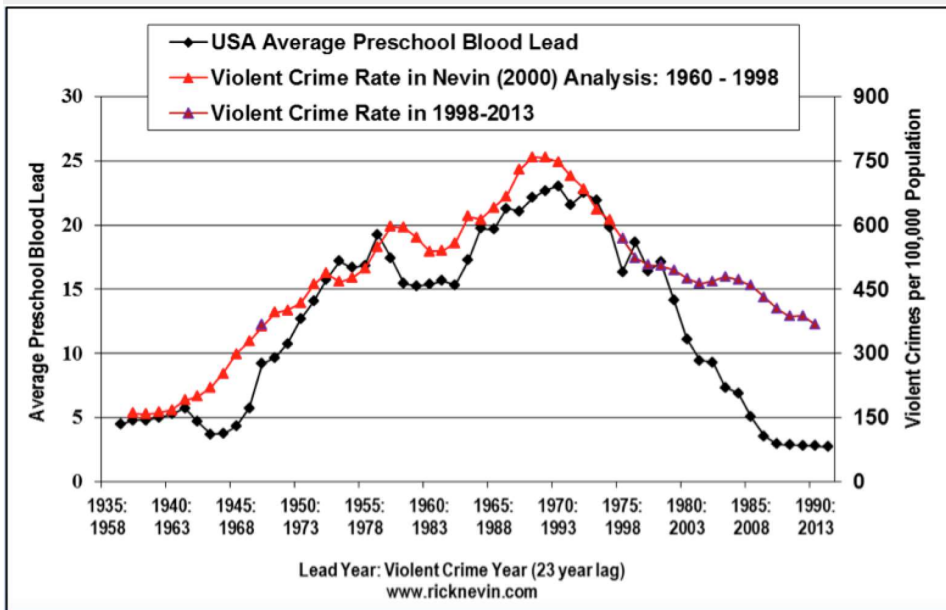


No. of participants 31      262      170      78



Source: <https://jamanetwork.com/journals/jama/fullarticle/2613157>

# PRE-SCHOOL LEAD EXPOSURE & CRIME RATES, BY COUNTRY

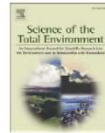




Contents lists available at SciVerse ScienceDirect

### Science of the Total Environment

journal homepage: [www.elsevier.com/locate/scitotenv](http://www.elsevier.com/locate/scitotenv)



## Environmental lead exposure and socio-behavioural adjustment in the early teens: The birth to twenty cohort

Nisha Naicker <sup>a,b,\*</sup>, Linda Richter <sup>c,d,e</sup>, Angela Mathee <sup>a,b</sup>, Piet Becker <sup>f</sup>, Shane A. Norris <sup>c,g</sup>

<sup>a</sup> Medical Research Council of South Africa, Environment and Health Research Unit, South Africa

<sup>b</sup> School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, South Africa

<sup>c</sup> Birth to Twenty, Department of Paediatrics and Child Health, University of the Witwatersrand, Johannesburg, South Africa

<sup>d</sup> Human Sciences Research Council, South Africa

<sup>e</sup> School of Psychology, University of KwaZulu-Natal, Durban, South Africa

<sup>f</sup> Biostatistics Unit, Medical Research Council of South Africa, South Africa

<sup>g</sup> Department of Paediatrics, University of Cambridge, UK



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## The association between environmental lead exposure with aggressive behavior, and dimensionality of direct and indirect aggression during mid-adolescence: Birth to Twenty Plus cohort



Palesa Nkomo <sup>a,b,\*</sup>, Nisha Naicker <sup>a,e,f</sup>, Angela Mathee <sup>a,e,f</sup>, Jacky Galpin <sup>c</sup>, Linda M. Richter <sup>b,d</sup>, Shane A. Norris <sup>b,d</sup>

<sup>a</sup> Environment & Health Research Unit, Medical Research Council (MRC), South Africa

<sup>b</sup> Health Research Unit, Department of Paediatrics, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

<sup>c</sup> University, Johannesburg, South Africa

<sup>d</sup> in Development, University of the Witwatersrand, Johannesburg, South Africa

<sup>e</sup> lth Sciences, University of the Witwatersrand, Johannesburg, South Africa

<sup>f</sup> ulity of Health Sciences, University of Johannesburg, South Africa



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### Environment International

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## The association between elevated blood lead levels and violent behavior during late adolescence: The South African Birth to Twenty Plus cohort



Palesa Nkomo <sup>a,b,\*</sup>, Angela Mathee <sup>a,e,f</sup>, Nisha Naicker <sup>a,c,e,f</sup>, Jacky Galpin <sup>c</sup>, Linda M. Richter <sup>d</sup>, Shane A. Norris <sup>b,d</sup>

<sup>a</sup> Environment & Health Research Unit, Medical Research Council, South Africa

<sup>b</sup> MRC/Wits Developmental Pathways for Health Research Unit, Department of Paediatrics, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

<sup>c</sup> School of Statistics and Actuarial Science, University of the Witwatersrand, Johannesburg, South Africa

<sup>d</sup> DST-NRF Centre of Excellence in Human Development, University of the Witwatersrand, Johannesburg, South Africa

<sup>e</sup> School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

<sup>f</sup> Environmental Health Department, Faculty of Health Sciences, University of Johannesburg, South Africa





# LEAD IN PAINT

- Fix pigment
- Speed up drying
- Predominantly in enamel paints
- Release of lead particles when paint flakes or crumbles
- Deposited in dust & soil
- Childhood: hand to mouth pathway of exposure.



# LEAD PAINT & POVERTY

- Preference for enamel paint
  - Durable;
  - Easier to clean.
- Degraded housing – peeling/flaking of paint.
- Low capacity for maintenance or repairs
- Leaking water pipes or roofs
- ***The poorer you are, the greater the risk***
- *The younger you are, the greater the risk*





# LEAD IN PAINT IN SOUTH AFRICA

- 2002 - survey of 1287 first grade children;
- Mean blood lead level = 7.4  $\mu\text{g}/\text{dl}$ , outlier = 44.4 (repeat = 51.5  $\mu\text{g}/\text{dl}$ )
- Severe pica habit – paint, soil & putty
- Home paint lead levels up to 46 000  $\mu\text{g}/\text{g}$
- Lead poisoning undiagnosed by health services.



# LEAD IN PAINT SURVEYS

- Statistical analyses showed elevated blood levels in children living in homes with peeling paint;
- 20% of Johannesburg dwellings have elevated lead in paint
- Lead paint used on playground furniture in public play parks
- Highly elevated levels of lead in paint on children's toys
- High levels of lead in new paint purchased from stores.





STAATSKOERANT, 31 JULIE 2009

No. 32455 3

## GOVERNMENT NOTICE

DEPARTMENT OF HEALTH

No. 801

31 July 2009

HAZARDOUS SUBSTANCES ACT, 1973 (ACT 15 OF 1973)

DECLARATION OF LEADED PAINT AS GROUP 1 HAZARDOUS  
SUBSTANCE

**The Star**  
**CLAMP  
ON  
POISON  
PAINT**

**Sunday Times**  
www.sundaytimes.co.za

**POISON  
TOYS  
BANNED**

www.sundaytimes.co.za

**The Star**  
**POISON-PAINT THREAT**  
State acts to protect children against unsafe levels of lead



**BAN LEAD PAINT**



**LEARN the Risks**

**JOIN the Action**

**ELIMINATE Lead Paint**

20-26 October 2019  
**International Lead Poisoning Prevention Week 2019**

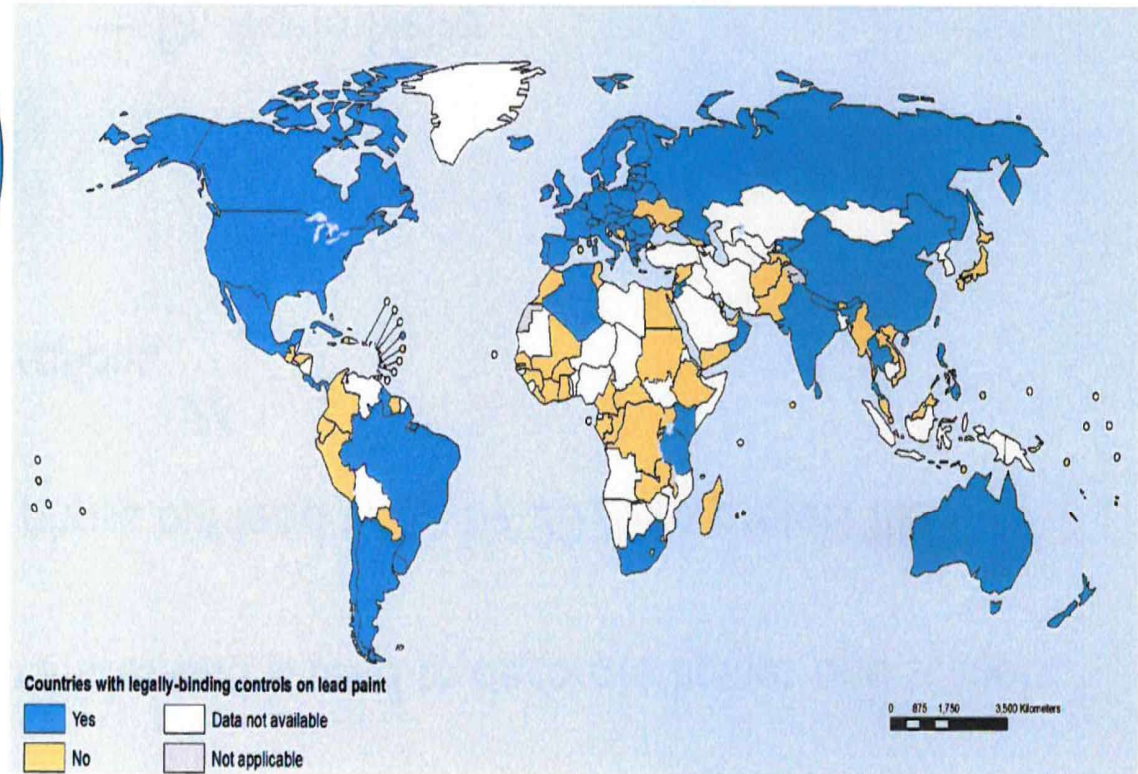
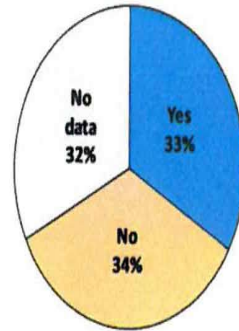
[www.who.int/lead\\_campaign/en/](http://www.who.int/lead_campaign/en/) #LPPW2019 #BanLeadPaint

**saMRC**  
advancing life



While many countries have long-established bans on lead paint, **it is still legal to sell lead paint for use in homes, schools and other buildings in more than one third of the world's countries.**

Children living in low- and middle-income countries, where there are few governmental controls on lead, are disproportionately affected.



Last year, over one hundred ILPPW events took place in 42 countries. This year the fifth annual ILPPW will take place in **the week of 22-28 October 2017.**

## Countries with Legally Binding Controls on Lead Paint as of February 2017



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[www.who.int/lead\\_campaign/en/](http://www.who.int/lead_campaign/en/) #ILPPW2019 #BanLeadPaint





## LEAD CONCENTRATIONS IN PAINT (post-regulation, 2012)

- Study of lead concentrations in “off the shelf” enamel paints undertaken in 2012;
- Lead concentrations ranged from  $< 0.25$  to **169 000 ppm** (282 times higher than SA regulations; 1878 times higher than USA reference level)
- **40%** of enamel paint samples had **elevated lead concentrations**
- Mislabelling: lead paint with no warning label or with label indicating “lead free”.





# LEAD IN PAINT

**AN INVISIBLE POISON!**

Lead poisoning is the cause of many illnesses. Lead has been added to paint for many years in South Africa. Paint containing lead is an important cause of lead poisoning in children.

This picture shows the many ways we are exposed to lead in paint in our daily lives. Use the information on this poster to protect yourself and your family from lead poisoning.



Artists and crafts people have a responsibility to use lead-free paint, to protect themselves and the community.

Never break open batteries to make mud paint for traditional homes. Batteries contain lead.

**BE LEAD FREE**

Adults who work in a place where lead is used should try to shower and change their clothing before leaving the work place.

Ensure that playground equipment is well maintained. Old flaking paint may contain lead.

Store paint well out of children's reach.

Use a wet mop or cloth soaked in soapy water to clean dirty or dusty areas.

When painting or removing old paint from your home, keep children well away from the work area.

Do not allow children to play with old cans of paint.

Never burn painted wood. It can be highly toxic.

Only buy "Lead-free" paint. Check the labels on the tin if you are not sure, or ask your paint supplier.

Encourage children to wash their hands often in soapy water, especially after playing in dirty or dusty areas.

Toys and coloured pencils bought from toy shops, supermarkets, flea markets and craft shops can also contain lead. Ask the shop keeper if the items you are buying are lead-free.

Pregnant women should be especially careful when using paint.

Many wooden and home-made toys are painted with paint containing lead. Always check with the toy maker or supplier that lead-free paint has been used.

Children's furniture should only be painted with lead-free paint.

Do not let children put toys, sticks, stones or other objects into their mouths. Also discourage children from chewing their nails or sucking their fingers.

**SIGNS AND SYMPTOMS OF LEAD POISONING:**

- Learning difficulties at school
- Hyperactivity, inability to concentrate.
- Hearing problems
- Anemia (weak and pale)
- Damage to organs

The signs of lead poisoning are not always visible.

**IF YOU THINK YOU OR ANYONE IN YOUR FAMILY MAY HAVE BEEN EXPOSED TO LEAD ASK A DOCTOR OR NURSE FOR A "BLOOD LEAD" TEST.**



# CONCLUDING REMARKS

- Successes:
  - Initial legislation promulgated in 2009;
  - Currently strengthening & extension;
- Unfinished agenda
  - Incomplete compliance;
  - Legacy concerns;
  - Informal sector;
  - Those in settings of poverty worst affected
  - Absence of national lead poisoning prevention strategy.





**BAN LEAD PAINT**



**THANK YOU**

**BAN LEAD  
PAINT**



**ELIMINATE  
Lead Paint**



**JOIN  
the Action**



**LEARN  
the Risks**

20-26 October 2019

**International Lead Poisoning  
Prevention Week 2019**

[www.who.int/lead\\_campaign/en/](http://www.who.int/lead_campaign/en/) #ILPPW2019 #BanLeadPaint