THE ONGOING STRUGGLE TO GET LEAD OUT OF PAINT IN SOUTH AFRICA

Professor Angela Mathee
- **Environment & Health Research Unit, Medical Research Council**
- **University of Johannesburg**
- **University of the Witwatersrand**

INTRODUCTION

- Lead poisoning is a widespread public health problem in South Africa and one of the top environmental health concerns in the country;
- Lead exposure occurs in urban as well as certain rural areas (such as lead mining towns & subsistence fishing communities);
- Paint is a key source of lead exposure. Lead is added to paint to :
  - fix the pigment, and
  - Speed up the drying process;
- Over time exposure to sunlight, heat, moisture and normal wear and tear may cause paint to peel or chip, and release fine lead particles into soil or dust;

CHILDREN AS A HIGH RISK GROUP

Children are particularly vulnerable to lead exposure, for the following reasons:

- **Children are naturally curious, and are driven to touch and taste objects and substances they come across;**
- **Relative to adults, children, eat, drink and breathe at a higher rate, and may therefore be subjected to higher levels of exposure to toxins in food, water & air;**
- **Children's organs and systems are incompletely developed & exposure to lead at this vulnerable stage may interrupt the organ/system development process;**
- **Some children have a condition called pica – a habit of eating non-food substances such as paint and soil;**
- **Because lead can cross the placenta during pregnancy, children may be exposed to lead even before they are born.**

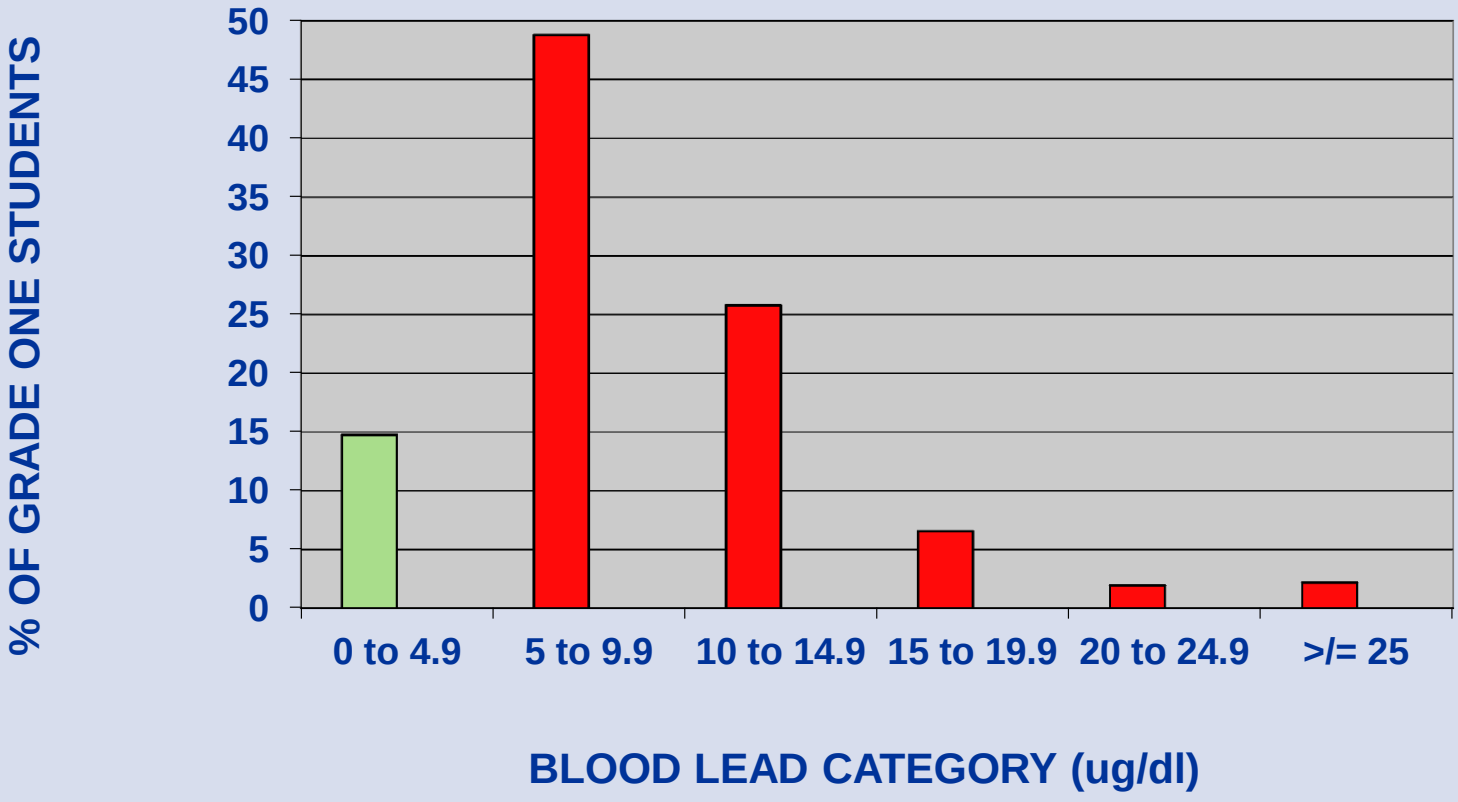
THE HEALTH EFFECTS OF LEAD EXPOSURE

Lead exposure causes harm to virtually all organ systems, including the following:

- **reductions in IQ scores and poor school performance;**
- **Sight hearing loss;**
- **Detrimental behavioural effects (hyperactivity, shortened concentration spans)**
- **Anaemia and damage to organs such as the heart, liver and kidneys;**
- **A growing number of studies is pointing to a link with aggressive or violent behaviour;**
- **At very high concentrations – permanent, severe brain damage, paralysis, coma, death**

Lead poisoning can only be confirmed through a blood lead test – for this reason it is often referred to as the *"silent epidemic".*

BLOOD LEAD DISTRIBUTION IN THE JOHANNESBURG SAMPLE, 2007



In 2007, the vast majority of children in a Johannesburg school sample had lead poisoning.

LEAD POISONING FROM PAINT | a South African case study

- In 2002 the Medical Research Council conducted a survey of blood lead levels in first grade school children in Johannesburg;
- The highest blood lead level (52 µg/dl) was in a 7-year old girl;
- The girl had a severe pica habit – on a daily basis she ate paint (from her home and school), soil & painted putty;
- Paint lead levels at both her home and school were elevated (up to 46 000 µg/g) relative to the current maximum level of 600 µg/g;
- Concern over the habit had prompted the parents to take their child to local health facilities on numerous occasions, but lead poisoning was never considered.

IN 2004 A SURVEY SHOWED WIDESPREAD USE OF LEAD IN ENAMEL PAINT

- Study of lead concentrations in "off the shelf" enamel paints undertaken in 2004;
- Lead concentrations ranged from "not detectable" to 189 000 ppm (38 times higher than the reference level);
- 60% of enamel paint samples had elevated lead concentrations
- No warning labels





LEAD IN PAINT IN SOUTH AFRICA | housing & schools

- In 1979 a study by the National Department of Health indicated that around 20% of interior walls in South African homes were painted with lead paint;
- In 2004 a paper was published on a MRC survey of paint led levels in Johannesburg dwellings – 20% were found to have lead-based paint
- A small sample of schools studied has indicated that between 18 and 36% have highly elevated levels of lead in paint (> 5000 µg/g).

LEAD PAINT WAS SHOWN TO BE WIDELY USED ON CHILDREN'S PLAYGROUNDS IN GAUTENG

	Johannesburg	Ekurhuleni	Tshwane	Total Sample
Number of samples	843	325	980	2148
Maximum lead level (mg/cm^2)	6.8	8.9	10.4	10.4
Mean lead level (mg/cm^2)	1.1	1.2	1.8	1.9
Standard Deviation	1.2	1.6	1.9	1.6
% > 1 reference level (1 mg/cm^2)	40%	37%	58%	48%
% chipping	87%	86%	79%	83%

VERY HIGH LEVELS OF LEAD HAVE ALSO BEEN FOUND ON CHILDREN'S TOYS

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POISON-PAINT THREAT

State acts to protect children against unsafe levels of lead

School rids itself of toxic substances

Sunday Times
OCTOBER 23, 2005

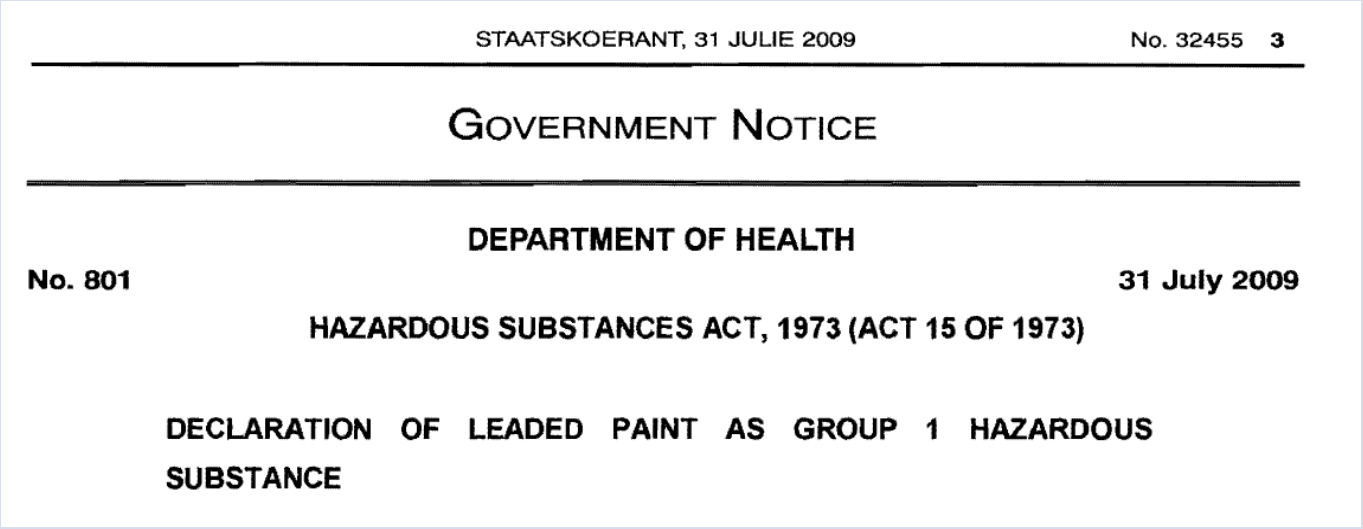
POISON TOYS BANNED

www.sundaytimes.co.za

Printed by The Newspaper Printing Company, 14 Pritchard St, Johannesburg
Published by Allied Publishing Ltd

CONTROL OF LEAD USE IN PAINT IN SOUTH AFRICA

- Until a few years ago, there was only a voluntary agreement in place amongst paint manufacturers to discontinue the use of lead in paint;
- Studies have shown that the agreement was widely flouted;
- In 2009, regulations to control the use of lead in paint were promulgated under the Hazardous Substances Act 15 of 1973.



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

STUDY OF LEAD CONCENTRATIONS IN PAINT | 2012

- Three years after promulgation of the legislation, a follow-up study of lead concentrations in "off the shelf" enamel paints was 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 STILL had elevated lead concentrations;
- Mislabelling: many instances of lead paint with no warning label.





CONCLUSIONS

- Lead poisoning is widespread in South African children;
- Lead paint is an important source of childhood lead exposure;
- Lead-based paint continues to be sold in South Africa, despite the promulgation of legislation to prohibit the practice;
- Exposure to lead in paint is a preventable environmental health risk in South Africa;
- Environmental health practitioners need to use the legislation available to act firmly to protect the public and especially children from lead-poisoning associated with paint.

SELECTED REFERENCES

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SOUTH AFRICAN MEDICAL RESEARCH COUNCIL

Building a healthy nation through research

FOR FURTHER INFORMATION ON LEAD HAZARDS AND POISONING, GO TO:

http://www.mrc.ac.za/healthdevelop/educationtools.htm

SOUTH AFRICAN MEDICAL RESEARCH COUNCIL
CHILDREN'S ENVIRONMENTAL HEALTH ALERT

BE AWARE OF LEAD IN PAINTED TOYS

What is lead?

Lead is a heavy metal that is widely used in modern life. Lead exposure and poisoning is an age-old problem that persists to this day. Lead is a powerful poison that mostly affects the brain. **Children, whose bodies are still growing, are highly vulnerable to lead.** The aim of this leaflet is to provide information on the hazards of lead, and how to prevent lead poisoning in children.

Lead-related health and social problems

High blood lead levels can cause many health problems, including:

- **Lowered IQ;**
- **Hyperactivity & difficulty in concentrating;**
- **Reading and learning difficulties at school;**
- **Hearing loss;**
- **Anaemia and abnormal growth of virtually all organs; and**
- **Permanent muscle paralysis, brain damage, coma and death (at very high doses).**

Many of these health problems are long-term and potentially irreversible, even after medical interventions to bring blood lead levels down.

The international standard for lead in toys is 90 micrograms/gram(µg/g).

Where does lead come from?

Lead is used in many products, including paint, petrol, batteries, plumbing, computers, cellular telephones, electrical appliances, radios, music and television sets, jewellery, cables, protective clothing, fishing weights and many other items. **The focus of this information leaflet however, is the lead added to paint and used on children's toys.**

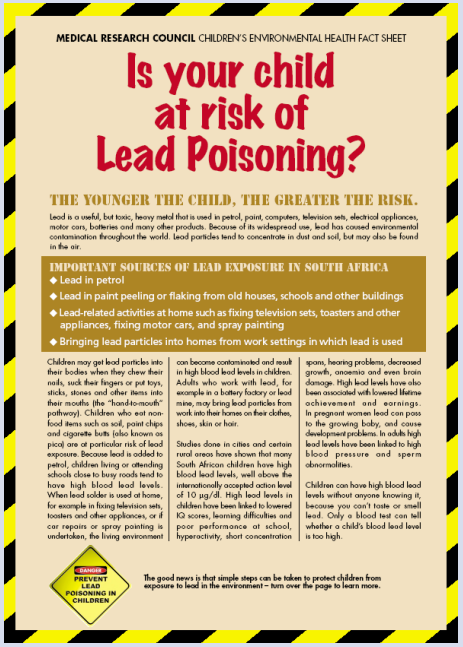
How does lead get into children's bodies?

Much of the lead released from a variety of products eventually ends up in soil and house dust. When children chew their nails or suck on their fingers, toys, sticks, stones and other items, they can get plenty of lead particles into their mouths. The lead particles are then swallowed and enter the blood stream, from where they are transported to the brain and other organs.

Some children have a habit of eating non-food substances, such as paint, sand and cement (this is called pica). There is particular concern about children with pica, or excessive mouthing activity, since lead in their blood may accumulate over time, and reach very high concentrations.

PHOTO by ANGELA MATHEE

health
Department: Health
REPUBLIC OF SOUTH AFRICA



MEDICAL RESEARCH COUNCIL CHILDREN'S ENVIRONMENTAL HEALTH FACT SHEET

Is your child at risk of Lead Poisoning?

THE YOUNGER THE CHILD, THE GREATER THE RISK.

Lead is a useful, but toxic, heavy metal that is used in petrol, paint, computers, television sets, electrical appliances, motor cars, batteries and many other products. Because of its widespread use, lead has caused environmental contamination throughout the world. Lead particles tend to concentrate in dust and soil, but may also be found in the air.

IMPORTANT SOURCES OF LEAD EXPOSURE IN SOUTH AFRICA

- Lead in petrol
- Lead in paint peeling or flaking from old houses, schools and other buildings
- Lead-related activities at home such as fixing television sets, toasters and other appliances, fixing motor cars, and spray painting
- Bringing lead particles into homes from work settings in which lead is used

Children may get lead particles into their bodies when they chew their nails, suck their fingers or put toys, sticks, stones and other items into their mouths (the "hand-to-mouth" pathway). Children who eat non-food items such as soil, paint chips and cigarette butts (also known as pica) are at particular risk of lead exposure. Because lead is added to petrol, children living or attending schools close to busy roads tend to have high blood lead levels. When lead solder is used at home, for example in fixing television sets, toasters and other appliances, or if car repairs or spray painting is undertaken, the living environment can become contaminated and result in high blood lead levels in children. Adults who work with lead, for example in a battery factory or lead mine, may bring lead particles from work into their homes on their clothes, shoes, skin or hair.

Studies done in cities and certain rural areas have shown that many South African children have high blood lead levels, well above the internationally accepted action level of 10 µg/dl. High lead levels in children have been linked to lowered IQ scores, learning difficulties and poor performance at school, hyperactivity, short concentration spans, hearing problems, decreased growth, anaemia and even brain damage. High lead levels have also been associated with lowered lifetime achievement and earnings. In pregnant women lead can pass to the growing baby, and cause development problems. In adults high lead levels have been linked to high blood pressure and sperm abnormalities.

Children can have high blood lead levels without anyone knowing it, because you can't taste or smell lead. Only a blood test can tell whether a child's blood lead level is too high.

REMINDER: PREVENT LEAD POISONING IN CHILDREN

The good news is that simple steps can be taken to protect children from exposure to lead in the environment – turn over the page to learn more.

OR CALL 011 274 6060