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

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

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<th>Tshwane</th>
<th>Total Sample</th>
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<tbody>
<tr>
<td>Number of samples</td>
<td>843</td>
<td>325</td>
<td>980</td>
<td>2148</td>
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<tr>
<td>Maximum lead level (mg/cm²)</td>
<td>6.8</td>
<td>8.9</td>
<td>10.4</td>
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<td>Mean lead level (mg/cm²)</td>
<td>1.1</td>
<td>1.2</td>
<td>1.8</td>
<td>1.9</td>
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<tr>
<td>Standard Deviation</td>
<td>1.2</td>
<td>1.6</td>
<td>1.9</td>
<td>1.6</td>
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<tr>
<td>% &gt; 1 reference level (1 mg/cm²)</td>
<td>40%</td>
<td>37%</td>
<td>58%</td>
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<td>% chipping</td>
<td>87%</td>
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VERY HIGH LEVELS OF LEAD HAVE ALSO BEEN FOUND ON CHILDREN’S TOYS
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.
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


FOR FURTHER INFORMATION ON LEAD HAZARDS AND POISONING, GO TO:
http://www.mrc.ac.za/healthdevelop/educationtools.htm

OR CALL 011 274 6060