Issues of Lead Poisoning and Developing Countries

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What is Lead Poisoning?

- Is a medical condition caused by increased levels of heavy metal lead in the body
- Lead is known to be a cumulative toxicant
- Children and pregnant women are particularly vulnerable
- Major health risk and challenge in most developing countries and CEITs
Why is Lead an issue in Nigeria?

• In 2002, the World Summit on Sustainable Development (WSSD) took two vital decisions to protect children's health from exposure to lead. The first called for the phase out of lead in gasoline, and the second, the PHASE OUT OF LEAD IN LEAD-BASED PAINTS AND IN OTHER SOURCES OF HUMAN EXPOSURE.

• The risks posed by lead in the Nigerian environment (like in most developing countries) on human health and environment in the absence of an adequate regulatory framework and strong enforcement capacity continue to be horrendous.

• The Nigerian paint industry with over 1000 S & M enterprises produces estimated 40 million litres of lead paints used in the country annually (PMA). Domestic Decorative paints have 60% of the market share, Industrial - 20%, Refinishing 10%, Wood finishing and Automotive have 5% each of the market share. From tests, most products show high levels of lead (Adebamowo, 2007)

• Total investment in the industry is about $100M (N15 billion) with an installed capacity in excess of 150 million liters of assorted paints per annum with about 10,000 people presently employed in the industry.

• Other sources of continuous Lead poisoning in Nigeria are:
Sources of Lead Poisoning in Developing Countries

• Lead mining and smelting
• Battery recycling
• Leaded gasoline
• Paint - Continuous use of lead in paint irrespective of safer alternatives known to be globally available.
• Traditional medicines
• Toys
• Discarded electronic devices

Above are also main source of global lead poisoning
Routes of Exposure to Lead

- Inhaling air or dust that contains lead. Mining activities can generate lead into the air.
- Eating food or drinking water that contains lead.
- Parents who are exposed to lead in the workplace can bring lead dust home on clothes or skin and expose their children.
- Some lead compounds are colorful and are used widely in paints, and lead paint is a major route of lead exposure in children and workers in automobile body repair shops in LDCs.
- Deteriorating lead paint and lead-containing household dust can produce dangerous lead levels in household dust and soil and chronic lead poisoning.
Exposure to Lead Particles in Dust in Nigerian village
Source. Akpan, 2011
Grinding of Raw Ore for Gold and Lead exposure in Nigerian community- Source: Akpan, 2011
## Issue of Lead in Paint

<table>
<thead>
<tr>
<th>Country of Origin</th>
<th>Paint type</th>
<th>Max Lead level content ppm</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroon</td>
<td>Emulsion</td>
<td>59,000</td>
<td>CREPD &amp; Ok International, 2011</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Automobile paint (autocray)</td>
<td>39,738</td>
<td>Alo et.al 2011</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Enamel (Gloss)</td>
<td>15,750</td>
<td>Adebamowo et.al 2007</td>
</tr>
</tbody>
</table>
### Lead Concentration (ppm) in New Enamel House paints in Selected Countries Of Three Continents - Developing Countries

**Source:** Scott Clark *et al.*, *Lead levels in new enamel household paints from Asia, Africa and South America*. Environ. Res. 109:930-936 (2009).

<table>
<thead>
<tr>
<th>Country</th>
<th>Continent</th>
<th>No. of Paint Samples</th>
<th>Average Lead concentration, ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Africa</td>
<td>20</td>
<td>26,200</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Africa</td>
<td>25</td>
<td>15,750</td>
</tr>
<tr>
<td>Seychelles</td>
<td>Africa</td>
<td>28</td>
<td>24,880</td>
</tr>
<tr>
<td>China</td>
<td>Asia</td>
<td>64</td>
<td>15,070</td>
</tr>
<tr>
<td>India</td>
<td>Asia</td>
<td>72</td>
<td>29,660</td>
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<td>Indonesia</td>
<td>Asia</td>
<td>11</td>
<td>14,770</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Asia</td>
<td>72</td>
<td>24,510</td>
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<tr>
<td>Singapore</td>
<td>Asia</td>
<td>41</td>
<td>6,988</td>
</tr>
<tr>
<td>Thailand</td>
<td>Asia</td>
<td>18</td>
<td>19,410</td>
</tr>
<tr>
<td>Ecuador</td>
<td>South America</td>
<td>10</td>
<td>31,960</td>
</tr>
<tr>
<td>Peru</td>
<td>South America</td>
<td>10</td>
<td>11,550</td>
</tr>
<tr>
<td><strong>Total/Average</strong></td>
<td></td>
<td><strong>371</strong></td>
<td><strong>20,070</strong></td>
</tr>
</tbody>
</table>
Lead Poisoning from Illegal Gold Mines – Zamfara State Incidence In Nigeria

• The Zamfara State lead poisoning incidence occurred in Nigeria in 2010. As of October 5, 2010 at least 400 children < 5 had died from the effects of lead poisoning.
• In March 2010, Medecine San Frontieres (MSF) staff in Zamfara MOH clinics reported ongoing pattern of excess childhood illnesses and deaths.
• It was noted that affected villages in the State were centres of artisanal gold ore processing activities.
• Heavy metal poisoning was considered a potential source of illness.
• Venous blood samples from eight symptomatic children tested in Germany indicated high Blood Lead Levels (BLL: 109.7 - 370 µg/dL) far exceeding WHO and US CDC levels of concern of 10 µg/dL indicative of lead toxicity.
• Villages Soil samples over 10,000ppm lead (cf. Dr Henry Akpan, FMOH)
Location of Zamfara State in Nigeria
Development Partners in the lead poisoning response in Nigerian Incidence

Federal Govt

MSF

CDC

Blacksmiths/Terrographics

WHO

UNICEF

USAID

Zamfara State Govt
Taking Action Against Risks

- Continue to raise awareness and provide education about children's environmental health issues from lead.
- Encourage the development and support of community-level initiatives to reduce environmental health threats to children and workers.
- Mandatory formal national activities for limiting lead concentrations in paints, mining.
- Urgent effort needs to be put in place to eliminate lead in paint as was achieved in lead in fuel phase out.
- Ban on trade in adulterated, unregistered, unlabelled, repackaged and uncertified paint products.
- Promote the recognition, assessment, and study of activities that will reduce children's and workers’ exposure to pollutants through education, regulation, use of cleaner fuels, lead-free paints etc.
Thank you for your attention

Further information from
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