Ministry of Environment and Forestry, Republic of Indonesia

Environmental and Health Impact of Lead in Indonesia

Workshop on Sound Management of Used Lead Acid Batteries
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Lead Contamination in Indonesia
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Pathway of used Batteries in Indonesia:
- Sumatera
- Jawa, Bali and Nusa Tenggara
- Kalimantan
- Sulawesi and Maluku
- Papua

Source: KLH-UNEP-SAICM-Blacksmith Institue-KPBB, 2014
Lead Contamination in Indonesia
(ULAB Hotspot in Jabodetabek)

Identification of illegal lead based used battery collection and/or smelter in Jakarta and surrounding area

Source: KLH-UNEP-SAICM-Blacksmith Institute-KPBB, 2014
Environmental Monitoring of Lead (Pb) in Soil

Air quality in Serpong still shows high levels of lead although gasoline containing lead (TEL) had been abolished in Indonesia since 2006.

High level of Pb on the ground at illegal used battery smelter site.

Pb Level in children’s blood above the threshold.

Concentration of Pb in Soil nearby used battery smelter in Jabodetabek (2010)

Source: KLH-UNEP-SAICM-Blacksmith Institute-KPBB, 2014
Environmental Monitoring of Lead (Pb) in Children’s Blood

<table>
<thead>
<tr>
<th>BLL Curug</th>
<th>BLL Cinangka</th>
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<tbody>
<tr>
<td>Mean</td>
<td>24.18</td>
</tr>
<tr>
<td>Min</td>
<td>12.10</td>
</tr>
<tr>
<td>Max</td>
<td>47.80</td>
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</tbody>
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Pb Level in children’s blood at Cinangka and Curug

Source: KLH-UNEP-SAICM-Blacksmith Institute-KPBB, 2014
Contaminated Site in Cinangka, Bogor Regency
Health Impact of Lead
Impact of Lead exposure on human health

Lead poisoning in the body causes serious health problems

- Headaches
- Irritability
- Reduced sensation
- Aggressive behavior
- Difficulty sleeping
- Abdominal pain
- Poor appetite
- Constipation
- Anemia

Additional complications for children:
- Lead is more harmful to children as it can affect developing nerves and brain.
- Loss of developmental skills
- Behavior, attention problems
- Hearing loss
- Kidney damage
- Reduced IQ
- Slowed body growth

Source: MedlinePlus/Mayo Clinic

Signs of Lead Poisoning:
- Mild Side Effects Include:
  - Fatigue
  - Muscle Pain
  - Abdominal Pain
- More Serious Symptoms Include:
  - Severe Headaches
  - Tremors
  - Nerve Damage
  - Seizures
  - Coma
  - Death

Leads in the Workplace:
- More than 3 million workers in the United States may be exposed to lead at their job.
- The following industries face an increased risk of lead poisoning:
  - Bathrooms
  - Manufacturing
  - Construction
  - Jewellery
  - Printers

Defective Products:
- Products must conform to federal lead paint standards. Every year hundreds of children's toys are recalled because they do not meet federal lead paint standards. Toys with lead are especially dangerous because children often suck or chew on them.

Dangers of Lead Poisoning to Children and Pregnant Women:
- Exposure to lead in the womb and lead poisoning in children can have serious mental and physical effects.
  - Impaired Attention/Concentration
  - Communication Problems
  - Hearing Loss
  - Learning Disabilities
  - Lack of Motor Skills
  - Memory Problems
  - Lower IQ

Lead in Plumbing Materials:
- For many years, pipes, plumbing fixtures, and soldering contained lead. Today even "lead free" plumbing materials may contain up to 0.5% lead. As plumbing materials contain lead, pipes can be released into the water.

Lead Paint:
- Lead paint was used in homes until 1978. More than 38 million homes may still contain lead paint.
- Demolition of lead paint can create lead paint chips and lead dust. Renovation projects in old houses can create lead paint dangers.

38 Million Homes may still contain Lead Paint

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1-800-992-6878 for a free legal consultation.
• When lead is absorbed by children, even if it’s in a small amount, it can cause disturbances in the early phase of physical and mental growth which then results in reduced intelligence and academic ability.

• 10-20 µg/dL of lead in a child's body could decrease 2 points level of intelligence (IQ)

• 32 million Indonesian children potentially exposed to lead, in particular from smelting facilities processing lead containing used batteries and weathered old layers of paint

• Prof. Dr. Umar Fahmi Achmadi (Professor of FKM-UI), concluded that every increasing of 1 µg/m³ blood, Pb can decline children’s IQ (Intelligent Quotient) skor by 0.975

The illustration of volume reduction of adult brain which had lead exposures since his childhood (colored areas is reduction area)
Health Condition

• Lead levels in the blood (BLL) of children in the village Cinangka relatively high:
  – An average of 36.62 µg / dL
  – Minimum 16.2 µg / dl were found in boys aged 6 years
  – Maximum (above the 60 µg / dL) was found in girls aged 7 years

• Children in the area of Cinangka has BLL 100% above normal limits /tolerances are determined by WHO (10 µg / dl).

• Children in the region of Smelter Used Batteries was found suffering from a decrease in IQ, damage to the cells and organs of the brain, anemia, impaired bone growth, impaired kidney function, nervous function damage, mental disability and physical disability.
Strategy Should be Taken for Handling Lead Contamination
EXISTING REGULATION TO CONTROL IMPACTS

- Act 1945
  - Indonesian people have the right to have a good and healthy environment
- Law Nu. 32 Year 2009 on Environmental Protection and Management
- Gov. Regulation Nu. 101 Year 2014 on Hazardous Waste Management, which states:
  - ULAB is categorized as hazardous;
  - ULAB import is prohibited
- Law Nu. 18 Year 2008 on Solid Waste Management
  - ULAB import is prohibited
- Ministerial Decree for SOP (Standard of Procedure) of Contaminated Site Recovery
Environmental Quality Monitoring

Inspection and Law Enforcement

Increasing the role of University & Research Centre

Conduct Awareness Campaign/Community Education

Develop mechanism for product registration containing of chemicals

Monitoring of Pollution Sources, such as: smelter, paint industry, etc

Substitution of Non Pb Substances

Decontamination Site of Pb

STRATEGY FOR LEAD CONTAMINATION CONTROL IN INDONESIA
Conclusion
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- Lead pollution is a threat to Indonesia’s future
- It is important to increase awareness and the role of stakeholders in order to control lead contamination
- Need to develop an alternative material as a substitute for lead
Terima Kasih

Thank you

Arigato