Preliminary Report on Blood Lead Levels in North Mitrovica and Zvecan
July 2004

Background
Although mining and metallurgic activities have been suspended since 2000, historical environmental pollution raised suspicions of ongoing exposure to the population in the contaminated zones.

WHO are in the process of implementing a 4 element programme to decrease human exposure to heavy metals. This programme takes the form of a Public awareness campaign, Health Risk Assessment, Health Capacity Building of institutions and risk management activities.

WHO together with local institutions have implemented a Health Risk Assessment during May, June and July 2004 to determine the extent and routes of exposure of children in Mitrovica and Zvecan to heavy metals (particularly lead) in the environment.

Lead Impact on Humans
The WHO and CDC acceptable level for lead in Blood is 10 micrograms per decilitre. This level has gradually been decreased to this level over the last 30 years as more information on the impact of lead on health is found. Blood Lead level generally indicates the previous 6-10 weeks of exposure.

Lead has chronic multi system effects in the human body, but the most significant effect is on IQ levels where meta analysis of numerous studies shows increases in blood lead from 10 to 20 micrograms/dl was associated with a decrease of 2.6 IQ points (1,2). These impacts are irreversible.

Children and pregnant women are the priority target groups as children and foetuses have a much greater susceptibility to the impact of lead.

Lead of the types found in Mitrovica is mainly absorbed into the body through inhalation, ingestion and through the placenta to the foetus in the womb.
Health Risk Assessment Methodology

Our aim is to confirm that environmental pollution with heavy metals is causing elevated Blood levels with heavy metals, particularly lead.

Preliminary environmental samples of soil, dust and vegetables have shown levels above acceptable standards of heavy metals – lead, arsenic, cadmium, zinc, nickel and some hot spots of mercury. Soil contamination is excessive.

Our target group are children 24 to 36 months old. This age group has been selected for the following main reasons:

- They have been conceived at least three months after the Trepca Smelter closure in July 2000, therefore exposure has only been received from environmental factors (not directly related to ongoing mining, smelting and metallurgic activities) or transplacentally.
- It is easier to identify where they play, sleep and what they eat as they are so dependent on their mothers, therefore identifying potential exposure pathways.
- These children fall into the priority target groups for lead exposure impact. – children are not small adults, their absorption of lead is greater and their tolerance to impacts from it is less.

For each child, WHO team members, along with local institution professionals have conducted the following assessment:

- Blood lead level analysis, (capillary sample)
- Full blood count
- Physical examination
- Psychological developmental screening

For every 10th child and for those shown with elevation of blood lead level over 15, we took a venous blood sample and implemented environmental sampling in order to determine the routes of exposure.
Preliminary Results.

Venous samples have been taken from children with levels of 15 micrograms per decilitre and above and for every 10th child for confirmation of the capillary sampling results displayed here.

The sampling is still continuing at present but preliminary blood lead level results of our risk assessment in the northern part of Mitrovica and Zvecan areas are as follows:

<table>
<thead>
<tr>
<th>Blood Lead Levels (ug/dl)</th>
<th>Total Number of children</th>
<th>Total % of sample group</th>
<th>Number and % of sample group (excluding Roma)</th>
<th>Number and % of sample group (Roma only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 9.99</td>
<td>24</td>
<td>41.37</td>
<td>24 (60%)</td>
<td>0</td>
</tr>
<tr>
<td>10 – 19.99</td>
<td>17</td>
<td>29.3</td>
<td>16 (40%)</td>
<td>1 (5.5%)</td>
</tr>
<tr>
<td>20 – 44.99</td>
<td>5</td>
<td>8.6</td>
<td>0</td>
<td>5 (27.7%)</td>
</tr>
<tr>
<td>45 – 64.99</td>
<td>6</td>
<td>10.3</td>
<td>0</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>65 and above</td>
<td>6</td>
<td>10.3</td>
<td>0</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100</td>
<td>40 (100)</td>
<td>18 (100)</td>
</tr>
</tbody>
</table>

According to medical institutions approximately 150 children, in the age group of 24 to 36 months, are living within this defined area. We have sampled a total of 58 children and 34 of have above acceptable levels. This represents 58.6% of the total sampled.

Twelve (12) children were found to have exceptionally high levels. Six of them possibly fall within the range described by the United States Agency for Toxic Substances and Disease Registry (ATSDR) as constituting a medical emergency (=>70ug/dl). (Our instrumentation is only able to read up to 65 micrograms per deciliter).

These 12 children all live in the Roma camps where small scale smelting is or has occurred.

We expect to see elevated Blood Lead Levels in other age groups of children.

Standard Medical Reponse

This requires urgent action.

According to ATSDR, children found within this range should:
1) Undergo diagnostic testing immediately as an emergency laboratory test and subsequently provided with treatment
2) Undergo aggressive environmental interventions
3) Be provided with education on Lead poisoning prevention actions and ongoing evaluation.
WHO Response

In regard to these above recommendation WHO have

- Taken venous blood samples to be analysed in Holland
- Contacted international toxicological expert, Dr Barbara Groszek for appropriate medical protocol in a situation such as this
- Contacted WHO European office where Dr Giorgio Tamburlini has suggested Dr Phil Landrigan at Mt. Sinai University Hospital in New York as a leader in this field. We are contacting him.
- Are organizing to tested Blood lead levels in children up to 6 years old and pregnant women in the Roma camps – possibly Wednesday 14th July 2004
- Taken environmental samples to be analysed in Holland
- Requested the community to shut down the smelter in Zitkovac Roma camp or at least to move it away and to keep their children away from the area.
- Commenced educational sessions with the Roma camps on how to decrease exposure and distribution of information.
- Called an initial stakeholder meeting to inform relevant persons of the situation.

Ongoing Activities and Delays

Currently we awaiting medical protocols to be sent to us and a health sector meeting will be called agree on appropriate medical action. Standard medical protocols for lead toxicity do exist where chelation therapy for these children with excessively high levels of lead would normally be recommended, but I have concerns over chelation therapy for these particular situations in the Roma camps and am seeking the advice and confirmation from world experts of the appropriateness of chelation therapy in these circumstances.

On agreement of protocol with the health sector a stakeholders meeting will be called for the locally involved relevant persons to decide upon their appropriate actions.

Without the results of analysis of the environmental samples we can only suspect that smelting activities in the camps is producing these excessive and dangerous blood lead levels in the blood as this is the main exposure difference with the rest of the sample group in the North Mitrovica and Zvecan area. Another possible reason for these excessive levels in the Roma communities is their local remedies, where molten lead is dropped into a glass of water and the child drinks the water, although this is less likely as all the children in the camps have high levels.

Although the Roma population is of course a major concern these results should not detract from the results in the population of the rest of North Mitrovica and Zvecan as 40% of the children have Blood Lead Levels 10 and above.
**Recommendations**

As an initial urgent step, without confirmation of results or receipt of environmental sample analysis, we request:

1) Zvecan Municipality to take immediate action to close or move the open smelter in Zitkovac Roma camp and organize for the removal of the dust and soil in the immediate area of the smelter to Zitkovac tailing damn.

2) North Municipality to investigate possible smelting activities in the North Mitrovica Roma Camp and if found it should be closed or moved.

3) Ensure access to clean water in the camps as hygiene is a preventative measure. Zitkovac camp is complaining about their water supply and stating it has been cut off.

4) I recommend the movement of Pregnant women and the children (particularly those up to six years old) from the Roma camps to a clean area as a precautionary measure until confirmation of routes of exposure and the initial results are obtained.

I do not recommend this lightly. This is a standard measure to prevent continuing human exposure and with these excessive blood lead levels these children are a true risk of encephalopathy and possible death.

Yours Sincerely

Gerry McWeeney  
Environmental Epidemiologist,  
Healthy Environment Programme Manager,  
WHO.

Email: who_hep@who.ipko.org  
gerrymcweeney88@yahoo.com  
Tel: +381 (0)38 549 216  
Mob Tel +377 (0)44 146 836, +381 63 7047269
