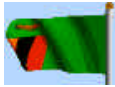


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Kabwe lead pollution ranked among world's worst

By NEWTON SIBANDA

A RECENT report by Blacksmith Institute, a US based not-for profit organisation has ranked Kabwe among the 'top 10 world's worst polluted places'- underscoring the gravity of lead poisoning in the former mining town.

The others are Chernobyl in Ukraine, Dzerzhinsk, Norilsk and Rudnaya Pristan/Dalnagorsk in Russia. They also include Haina in the Dominican Republic, La Oroya in Peru, Maiuu Suu in Kyrgystan and Ranipet in India.

The gravity of the problem is underscored by the term the Blacksmith Institute labeled as - "The Silent Death."

The report indicates that the number of people potentially affected by the lead and cadmium pollutants stands at 250,000.

According to the report, on average, children's blood levels in Kabwe are five to 10 times the allowable EPA maximum.

History

In 1902, rich deposits of lead were discovered in Kabwe, once a thriving mining town. Ore veins with lead concentrations as high as 20 per cent have been mined deep into the earth and a smelting operation was set up to process the ore.

Mining and smelting operations were running almost continuously up until 1994 without the government addressing the potential danger of lead.

This smelting process was unregulated during this period and these smelters released heavy metals in dust particles, which settled on the ground in the surrounding area.

From the turn of the century until 1994, Kabwe has been host to Africa's largest lead mine and smelting operation. Rich deposits of lead were discovered in Kabwe in 1902, and mining operations have been running almost continuously since then.

The mine was declared worked out in 1994, and closed down. Portions of the smelter and mine have since been sold to scrap dealers, and other private companies that are working the tailings.

The smelter worked without any operational pollution controls for most of its life, and emissions from the plant have contaminated air, soil, and vegetation throughout the town.

Roughly, 250,000 people live in Kabwe, (down from about 450,000 at its peak in the 1990's) and about 50,000 live in the most polluted regions - those neighbourhoods closest to the mine and smelter.

Over the past decades, millions of people have been affected by this problem. Soil levels as high as 5.2 per cent total volume of lead have been recorded in residential yards near to the mine.

Blood concentrations of 300 micrograms/decilitre and over have been recorded in children, and records show average levels in children of between 60 and 120 mcg/dl. Levels over 10 are considered unhealthy, and levels in excess of 120 usually result in death.

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Yet, remarkably, the citizens of Kabwe have, for the most part, been completely unaware that they are living in the middle of one of the most poisoned cities on earth. Socialism, government control of the mining company, decades of cover-up, and poverty, are all a part of the equation.

Lead

Lead is one of the most potent neurotoxins known to man.

Normal blood levels are less than 10 mcg/dl. Levels above that amount are cause for treatment in the U.S.

Symptoms of acute poisoning occur at blood levels of 20 and above, resulting in nausea, vomiting and diarrhoea, leading to muscle spasms and kidney damage.

Levels above 70 are considered medical emergencies in the U.S., and result in immediate hospitalisation.

Over about 120, serious brain damage begins, and death rates are in excess of 45 per cent, with 40 per cent of survivors having permanent cerebral damage.

The intelligence quotient (IQ)- a measure of mental capacity- is also substantially affected by lead poisoning, even at very low blood levels.

Research shows that for every 10 mcg/dl increase, IQ drops by four to seven points. Small increases in blood levels also correlate with other neurological effects, including attention deficit, hearing impairment, reaction time and coordination.

Other effects at relatively low blood levels include renal dysfunction, anaemia, and osteoporosis. Lead in a mother's blood can cross the placenta and put the baby at risk.

There exists data collected on children who visited Kabwe clinics and hospitals (all of which were run by the former mining conglomerate, ZCCM) between 1989 and 1994. The report notes that whenever a company employee visited the hospital, the company routinely did blood tests to check for lead, although they did not tell the patients the reasons for the tests, nor did they ever disclose results of the tests.

Blood levels ranged from zero to 400, with most children testing between 60 and 100 micrograms per decilitre.

Children with levels over 90 or so were often called into the hospital for chelation treatment, but then sent home without being advised of the cause of the problem, or the reason for the treatment.

Chelation therapy involves administering a drug intravenously that helps the body to flush out heavy metals, and can cause serious kidney damage in its own right. In any case, they would have returned home to be poisoned anew.

Soil tests in the local township in 1990, with samples taken from residents' yards and surrounding areas, ranged from 7,000 ppm (0.7 per cent) to 38,000 ppm (3.8 per cent).

The same sites were re-measured in 1995 and ranged from 4,000 ppm (0.4 per cent) to 21,000 ppm (2.1 per cent).

Though the mine and smelter is no longer operating, it has left a town poisoned from debilitating concentrations of lead in the soil and water from slag heaps that were left as reminders to the smelting and mining era.

Some of the lead concentrations in soil have been recorded at

2400 mg/kg. In one study, the dispersal in soils of lead, cadmium, copper, and zinc extended to over a 20 km circumference from the smelting and mining processes.

The soil contamination levels of all four metals are higher than those recommended by the World Health Organisation (WHO).

In some neighbourhoods in Kabwe, sadly, blood concentrations of 200 or more micrograms/decilitre have been recorded in children and records show average blood levels of children range between 50 and 100 mcg/dl.

Children who play in the soil and young men who scavenge the mines for scraps of metal are most susceptible to lead produced by the mine and smelter.

A small waterway runs from the mine to the centre of town and was used to carry waste from the once active smelter. There is no restriction to the waterway, and in some instances, local children use it for bathing.

In addition to water, dry and dusty backyards of workers' houses are a significant source of contamination for the locals.

One of the most common ways that workers and residents become exposed to toxic levels of lead is through inhalation of contaminated soil ingested into the lungs. This is one unhealthy place.

The Mines and Smelter at Kabwe

Around the mines and smelter in Kabwe, children play and young men scavenge for scrap metal and coal. Lead levels in the soils are all off the scale, yet there is no fence, nor any reasonable controls to stop access to the site.

Leading away from the mine and through the centre of town runs a small waterway that used to carry waste from the smelter during its operation.

Lead concentrations around its banks are also off the chart, in excess of two per cent total lead in some cases. There is no restriction on access to this waterway, and local children use it for bathing.

The dry, dusty backyards of workers' houses are a main source of contamination for the locals. Lead in the soil is ingested through the lungs, one of the most potent routes for the poison to enter the body.

Remarkably, the citizens of Kabwe have, for the most part, been completely unaware that they are living in the middle of one of the most poisoned cities on earth. Socialism, government control of the mining company, decades of cover-up, and poverty, are all a part of the equation-the report notes.

Why Doesn't the Community Know?

Before the mines closed, Kabwe was a quintessential company town. The mines ran all the services, health facilities included. The Blacksmith Institute report notes that as a socialist state, Zambia relied heavily on revenues from the mine.

Clearly, those in control were aware of the problems they were creating, as there was some testing done of blood and soil levels.

However, they chose not to act, and in the absence of a dissenting voice, the public was kept uninformed.

Only one news item about the dangers of lead appeared in the press - a small article in 1989 that had no follow-up. Key personnel that advocated a more ethical approach to the matter

were removed from the ZCCM system in the late 1990's.

Since then, the town has been struggling to re-invent itself as a centre of agriculture, and no attention has been paid to the issue.

However, children and adults have been dying by the thousands of lead poisoning, all with the same type of symptoms, which they attribute to malaria.

The incidence of mental retardation, meningitis, and infertility in the town are also alarmingly high, yet the causes have never been questioned and each are associated with lead poisoning.

Poor nutrition exacerbates the condition, making treatment more difficult, and increasing the effects of lead absorption.

Clean up

After decades of contamination, the clean-up strategy for Kabwe is complex and in its primary stages. The first step is to educate the community about the risks of lead poisoning and their susceptibility to the pollutant.

Precautionary measures have been taken to educate the population about the problem and to provide simple, concrete advice to avoid poison (such as to prohibit children from playing in the dirt and to rinse dust from plates and food etc.).

Some areas of Kabwe, the report notes, require drastic remediation in which some entire neighbourhoods may need to relocate.

Blacksmith has helped Kabwe's environment by establishing a local non-governmental organization (NGO), Kabwe Environmental and Rehabilitation Foundation (KERF) whose role is to bring educational services into each community with nursing support and expertise to locals as well.

As a result of Blacksmith's local initiatives and involvement, the World Bank has stepped in through the Copperbelt Environment Project (CEP).

The bank approved a US \$20 million grant to clean up the city and has just completed the scoping study that will lead to initial clean-up activity beginning in 2007.

What Next?

The report notes that the strategy to fix this problem is complex and only now beginning to be discussed.

There is a need for public education, and for remediation works. Some of the most affected neighbourhoods might need to be relocated.

Steps have been taken to educate the population about the problem, and provide simple, concrete advice to avoid the poison. (Don't let your kids play in the dirt, wash the dust from plates and food, etc.).

A local NGO is being formed to bring this service into each community, and to bring nursing support and expertise to the locals as well.

Remediation works will require large donor funds, and the World Bank is already involved.

However, more international support will be needed across many levels to stop the 'silent death.'

Even more sensitisation is required to prevent the local population from the risk of lead poisoning.

For comments, contact

nsibanda@yahoo.com/vusasibanda@gmail.com or 096-452590

<>

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