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Stuck in a zone of poison

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Pathways made of ochre-coloured sand trace a tangled pattern through Katondo, a settlement in Kabwe in central Zambia. Mud houses and makeshift shops line the unnamed, potholed streets.

Children laugh carelessly as they run and play next to a contaminated water canal that used to carry mine waste. During January, part of the rainy season, the earth turns to slippery clay and craters fill up with muddy water. Beyond the rusted steel barrier of the canal, women and young girls make their way through the sludge to visit the few taps that hold clean water.

In the wake of environmental disaster, life in the settlement carries on as normal.

Kabwe, the country's second-largest town and once a thriving base of lead and zinc mining, is one of the most polluted places on Earth. It suffers from large-scale lead contamination, the legacy of the town's now-defunct lead mines that were run by the state-owned Zambia Consolidated Copper Mines Investment Holdings until they closed down in the mid-1990s.

But if one were not aware of Kabwe's contamination, the town would seem as ordinary as any other in rural Africa. Even the most contaminated areas, like Katondo, reflect nothing more than the visible poverty of their people.

Initially the cause of the contamination, today the lead mine is a ruin of lone concrete pillars and abandoned buildings, lost in a sea of brick and stone. Mounds of lead-soaked mine waste remain as the toxic remnants of past operations.

Last year, the American NGO the Blacksmith Institute identified Kabwe as one of the 10 most polluted places in the world, along with others such as Chernobyl in the Ukraine. The United States-based institute also helped to set up the Advocacy for Environmental Restoration (AER) group, to assist with awareness campaigns in the area.

Deadly dust

Katondo cropped up in the shadow of the old mine, and its proximity to the source of contamination makes it a high-risk area. During Kabwe's dry season, winds blow refuse and dust from the nearby mine dumps into Katondo.

This dust is infused with traces of lead, a powerful neurotoxin that is easily inhaled. Paul Chisala, AER coordinator in Kabwe, explains that most people in Katondo have been educated about the area's contamination by making them aware of their exposure to this "dust".

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An old mine in Kabwe lies deserted and in ruin, and lead from the surrounding mine dumps contaminates the area. (Photo: Sumayya Ismail)

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It has the worst effect on children. Awareness campaigns focus on informing parents to keep their children bathed and clean, and to keep them indoors as much as possible -- especially in the dry season when the dust is everywhere, says Anna Mwemba, a resident of the area for more than 10 years.

"It is safer [in January] because there is hardly any dust in the rainy season," says Mwemba. Speaking in Bemba, she explains that residents "must be very careful" during the dry season, and take extra precautions to protect themselves.

As she lays out a reed mat outside her family's one-roomed mud house, Mwemba's youngest child and namesake, four-year-old Anna, is by her side. Offering us a seat on the mat, Mwemba apologises for not having any chairs for us to sit on. Like most in Katondo, she is unemployed. She sells vegetables on the side of the road, while her husband, Leonard, does odd jobs to make money.

Taking her daughter's hand and sitting on the reed mat beside us, Mwemba says the first time she and her husband heard about the dust was in 2005, through official public-awareness campaigns.

Out of curiosity, they took Anna for tests at the nearby health centre, and found that, like many other children, she tested positive for lead poisoning. Her lead levels were 48 micrograms per decilitre (mcg/dl) of blood -- almost five times the allowable level in the US.

According to the Blacksmith Institute, average levels of lead in the human body are less than 10 mcg/dl, and anything above that is medically treated. Symptoms of acute lead poisoning occur at levels of 20 mcg/dl and above, and levels in excess of 120 mcg/dl can lead to death.

When breathed in, ingested or absorbed through the skin, lead enters the blood stream, resulting in health deficiencies such as lower IQ levels, hearing impairments, anaemia, vomiting and diarrhoea. In extreme cases, muscle spasms, kidney damage and permanent brain damage could occur.

Anna has a nagging cough that crops up on occasion during our conversation. Her mother says it is an effect of the dust. "But it's getting better now because of the rain," she adds.

Despite the four-year-old's relatively high level of contamination, there are no other visible indications that she is suffering from lead poisoning. Mwemba tells us that she has been taking medication from the local clinic.

By the Blacksmith Institute's standards, Anna's levels of contamination are high, but in Kabwe she could be one of the luckier ones. According to the institute, records of children in Kabwe show that they have average blood levels of between 60 and 120 mcg/dl. In the affected areas, more than half of the children sampled have tested positive for lead poisoning.

Government attention

Despite these soaring figures as well as attention from international organisations, some individuals in the government are not as convinced about the gravity of the issue. A member of the Zambian Health Ministry says the situation has been "blown out of proportion".

"Kabwe is affected, but not the whole of Kabwe -- [it is] not as badly affected as it has been made to seem," says the health official, who asked to remain anonymous.

Since 2000, the Zambian government, through the mine and the Copperbelt Environment

Project (CEP) and with funding from the World Bank, has been involved in creating programmes that bring awareness and rehabilitation to affected communities and areas.

The AER's Chisala explains that it is the government's responsibility to rectify the dire situation, as it owned the mine during its operation, when contamination first started occurring.

Joseph Makumba, the mine's environmental manager and the coordinator of the CEP in Kabwe, estimates that about 90 000 of the town's 300 000 inhabitants are currently affected. Many of them live in Katondo, where the mine's waste canal still runs through the centre of the settlement.

Although the canal is contaminated with lead, it has not been blocked off from the community. Children play around it, unconcerned or possibly unaware of the dangers.

Underground water supplies are also contaminated. A shallow well near Anna Mwemba's house lies open, with a half-filled plastic bucket on the ground next to it. Residents have been warned not to use the water from these wells, but sometimes there is no alternative.

There are taps scattered throughout the settlement that provide treated water from the town council. But, according to Chisala, the supply from these taps is often erratic and unreliable. A new water tower is being constructed by the mine, near the lead information and awareness centre in Katondo, but for now, these wells are often the last resort.

Awareness

The information and awareness centre is one of the initiatives set up by the mine to educate the community. It acts as a community centre of sorts, but its main focus is lead awareness. Mujinga Kamoto, who runs the centre, says it has achieved about 50% awareness within the Katondo community.

But outside the centre, we meet 40-year-old Annie Mwila, who tells us that she has no idea what the centre is used for. Mwila, who lives near the centre and uses the nearby council tap for water, says that although she has heard about the dust, she does not know anyone who is sick because of it.

As Chisala points out, from 1904, when the mines opened, until their closure about 90 years later, "there was no publicity about the negative effects of the lead".

"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," the institute says on its website, attributing the lack of knowledge to "socialism, government control of the mining company, decades of cover-up, and poverty".

Makumba says, however, that the mine did inform its workers about the dangers of contamination. "But they did not understand the seriousness of it at the time."

Wilberforce Shichepa, who worked at the mine for almost 20 years as a maintenance engineer, now sells spare parts out of one of the abandoned warehouses on the mine estate. Overlooking the mine dumps where local residents scavenge for scraps of metal to sell for money, he explains the dangers of breathing in the toxic waste.

He remembers being informed about the possibility of lead contamination. "Everyone who did work in the key areas knew," he says, recalling that they were required to give blood samples to test the levels of lead in their systems, "but it was never explained how dangerous it [the lead] was."

Even if people in the affected settlements are aware of the dangers posed by their environment, they have no choice but to live with it. Many who live in settlements like Katondo have to make ends meet through informal trading -- work that yields no more than 50 000 kwacha (R100) a day.

"They have to live here out of necessity," Chisala says. "They have no money to move anywhere else."

The CEP's Makumba says the government and the mine have set their rehabilitation plans in motion. Plans are under way to increase the pace of the awareness campaigns, to rehabilitate the area by capping the surrounding mine dumps and to cut off access to the contaminated canal, but he admits that the lack of adequate resources hinders their efforts.

"We have \$40-million [funding from the World Bank] to share between Kabwe and the rest of the Copperbelt," Makumba says. "We have limited resources and funds â€¦ but we

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are doing what we can under the circumstances; we are doing well with the community and with what we have."

While those who have a say slowly grapple with healing Kabwe's wounds, children like Anna Mwemba are at risk just by playing in the sand; people scavenging through the ruins to make a living ruin their health in the process; and life still carries on.

"With help and work, [the situation] is changeable," Chisala says, more hopeful about the future. "There is a way forward."

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