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What Flint, Mich., And Kabwe, Zambia, Have In Common

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SUSAN BRINK



Looking for scraps of lead to sell, young people in the town of Kabwe dig through the toxic tailings left behind from 100 years of mining.

Courtesy of Pure Earth

On the surface, Flint, Mich., and Kabwe, Zambia, don't seem to have a lot in common.

They're half a world away from each other. One is a city of 99,000 in one of the richest countries in the world. The other is a city of 203,000 in a lower-middle-income country.

But there are a few threads of connection. Both were once bustling, industrial hubs, one dependent on the auto industry, the other on mining. Both were abandoned by the industry that once sustained them. "With declining industry in both communities, there was a series of bad decisions, a lack of attention, and environmental injustice," says Richard Fuller, president of Pure Earth, an organization that identifies and helps clean up poor communities with high levels of environmental toxins. Now, both Flint and Kabwe need the world's attention to clean up a mess.

And in each community, the mess is caused by lead poisoning.



THE TWO-WAY

Michigan Steps Up Efforts To Tackle Lead Crisis After Outcry

Lead contamination in the U.S. has dropped dramatically since the 1978 ban on lead-based paint in housing and on leaded gasoline in 1996. But it is still a problem in some of the country's poorest neighborhoods. In 2014, about one-half of 1 percent of American children under 6 had worrisome levels of lead in their blood, according to the Centers for Disease Control and Prevention. The crisis in Flint, in which health officials found that city residents had been exposed to lead in their drinking water since April 2014, is a reminder that lead is a global problem that each year kills 143,000 people and is responsible for 600,000 new cases of children with intellectual disabilities.

"Flint is an example of a contaminated site," says Fuller. "But there are places hundreds of times worse, in thousands of places in the world. And that's not an exaggeration." One of those places is Kabwe.

The lead contamination began in the early 20th century. The town is located in Zambia on land rich in lead ore. "The town formed around a smelter that ran without

any pollution controls," says Fuller. When the ore ran out, owners abandoned the smelter. "But the whole town became massively contaminated with lead. That smelter had a smokestack blowing every which way all the time. It's a very dry place, so dust was deposited everywhere." In 100 years, the toxic lead has not gone away. Children play in the dust, walk in it, have it blown in their faces and on their hands, and lick their fingers.

In a report published Nov. 7, 2014, in *Morbidity and Mortality Weekly*, researchers measured soil lead concentrations in various neighborhoods in Kabwe. They found soil concentrations of lead an average of three times higher than the U.S. Environmental Protection Agency standard, and in the most toxic areas, more than 1,000 times higher than the EPA standard. And when they measured lead levels in the blood of children, they found the levels literally off the charts — levels in children from some neighborhoods so high that they surpassed the level the instruments could measure. The CDC uses a reference level of 5 micrograms per deciliter to identify children with abnormally high lead levels. The lowest blood level in the children measured was 13.6 micrograms per deciliter; the average was 48.3; and the highest couldn't be measured because more than 25 percent of the children had levels higher than the 65 micrograms per deciliter the instruments could measure.



Local crews work to clean up lead-laden soil in the Zambian town of Kabwe.

Courtesy of Pure Earth

In a neighborhood called Chowa, closest to the old smelter, "almost every single child is suffering from lead poisoning," says Fuller.

When it comes to lead, health officials are most concerned about children because, as everyone knows, they can't keep their hands out of their mouths, even if they've just been playing in the dirt. And their brains are still works in progress, developing new neural connections every day with each new learning experience. "Lead interferes with neural connections," says Dr. Jack Caravanos, professor of environmental health at the City University of New York, School of Public Health, a technical adviser to Pure Earth and an author of the MMWR report. When lead enters the brain, he says, "there is a reduction in and disruption of those connections. It's generally considered irreversible."

Lead can harm adults, too, causing high blood pressure and kidney damage. In pregnant women, it can cause miscarriages, stillbirths and premature births.

In the neighborhood of Chowa, work has started to clean up the lead mess. "It's a huge project. Lead is an element, you can't destroy an element, but we've got to stop it from getting into the kids," says Fuller. His organization has begun literally moving the dirt with highest levels of contamination to encapsulate in landfills, then cover what's left behind with a permeable membrane. Workers cover the membrane with layers of clean soil. "We tamp it all down and stop the dirty stuff from rising," says Fuller. Local officials have been trained in the cleanup method and have tackled one neighborhood of 80 homes. There are thousands of homes yet to be cleaned up.

The problem of lead in the environment goes beyond industries leaving behind toxic messes. Some underground entrepreneurs are making their own present-day messes by recycling old car batteries in unregulated, unsafe ways. Those batteries contain a large amount of lead, and recycling them is a thriving, informal business in many parts of the world, says Fuller. "People might take them to a river bank, break them down with an ax, let acid pour on the ground," says Fuller. "They're looking to create an ingot they can sell. It's a toxic and dirty method, and it spreads through the community through the river, or the air from burning. Every urban center in the developing world has these sites." In 2008, for example, 18 children in Senegal died of lead poisoning after they accompanied their mothers who took apart old batteries and melted them down for scrap lead.

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