

Peruvian mining town must balance health and economics

Dangerously high concentrations of lead have been found in blood samples from nearly all young children in a Peruvian smelting town high in the Andes. But while health activists want the town's toxic plant shut down, residents worry about the economic consequences. Barbara Fraser reports.

When Fernando Serrano came to take blood and urine samples from residents of this mining town 3700 m up in the Andes, he did not expect to be met by egg-throwing hecklers and leaflets accusing his research team of being "vampires".

The harassment probably came from supporters of the town's major employer, a massive smelting complex, who feared his findings would lead to a shutdown of the plant.

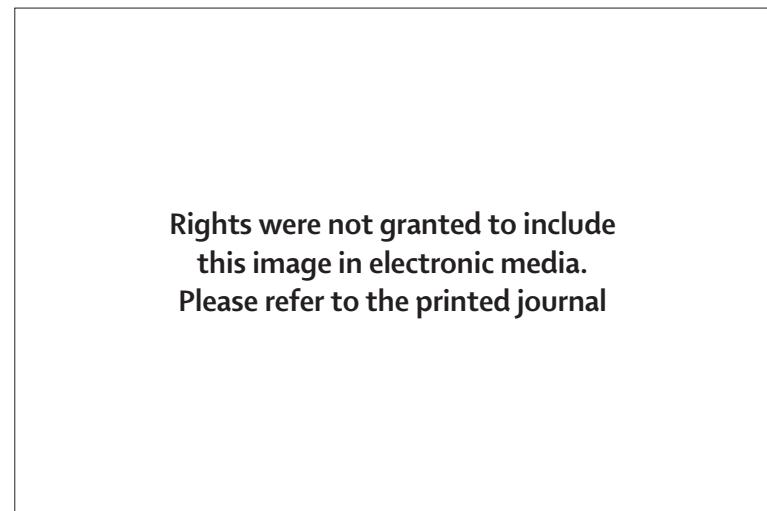
The team confirmed earlier findings of high blood-lead concentrations, but also found high levels of cadmium, arsenic, mercury, antimony, caesium, and thallium, and not just in their test subjects but also in a control group living in a village 80 km away.

"I was scandalised", says Serrano, who teaches in the St Louis University School of Public Health's Division of Environmental and Occupational Health in Missouri, USA. "We found levels of lead in children that you don't even see in the USA in adults who work with lead."

Since the late 1990s, studies in this town whose landscape and economy are dominated by an 80-year-old multi-metal smelter and refinery complex, have found that virtually all the children younger than 6 years old, and many older children and adults, have blood-lead levels exceeding the WHO limit of 10 µg/dL.

But the St Louis University study, whose preliminary results were released in Peru in December, is the first to test for other metals—14 in all—in blood and urine, as well as dust and paint samples from the participants' homes.

The La Oroya smelter and refinery complex has long been a subject of controversy. The complex—originally built by a US company, then seized by the Peruvian government and nationally



Nearly all of La Oroya's 6 year olds have dangerously high levels of lead in their blood

owned for many years—was purchased by the Missouri-based Doe Run Company in 1997.

A 2004 study by the Peruvian Ministry of Health's Environmental Health Office (Digesa) found that 99.9% of children younger than 6 years old in La Oroya had blood-lead levels above 10 µg/dL, well above levels associated with growth impairment and lower IQs in children.

Although Doe Run executives point to clean-up measures that have been instituted at the plant, a 2002 study by the California-based Interamerican Association for Environmental Defense found that lead, cadmium, arsenic, and sulphur dioxide pollution increased after Doe Run bought the complex and boosted production, largely because of "fugitive emissions" from sources other than the plant's main stack.

The company has won Peruvian government approval several times for changes to its environmental mitigation plans. In December, 2005, it applied for a 4-year extension to the deadline for building a plant to

capture sulphur dioxide and convert it to sulphuric acid.

"Doe Run Peru prioritised children's health", Juan Carlos Huyhua, the company's general manager, said in an interview on Lima's CPN Radio on Feb 7. "There have been results and improvements."

Huyhua said that children's blood lead levels have decreased by 50% since the company began implementing environmental-control measures at the plant and started a pre-school programme that takes children younger than 6 years old farther from the smelter during the day. He also said that metals emissions, including "fugitive emissions", will be under control by the end of this year.

Company officials also point to better hygiene at the plant, where workers now use full-face respirators and change their work clothes before leaving, to avoid taking contaminants home. Doe Run and the local government have also launched brigades of street sweepers and sponsored hand-washing campaigns to decrease oral

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La Oroya's citizens protest against the town's Doe Run processing plant

ingestion, the most common source of lead poisoning in young children.

But Serrano says that while better hygiene is good, it is not enough to lower La Oroya's blood-lead levels.

"There is evidence that that sort of intervention helps lower lead levels, but no one talks about them as the main way of dealing with levels of 40 [$\mu\text{g}/\text{dL}$] or more", Serrano says. "That can't be the focus of a community intervention—it would be like transferring responsibility to the family."

The US Centers for Disease Control and Prevention (CDC), which is analysing the blood and urine samples from Serrano's study, came to the same conclusion after a May, 2005, visit to La Oroya sponsored by the US Agency for International Development. The CDC report concluded that "without reduction of air emissions and remediation of soil, home hygiene and clean neighborhood campaigns are of little value in decreasing elevated BLLs [blood lead levels]."

The CDC called for an "integrated intervention plan to reduce exposure to lead and other contaminants" in La Oroya, designed with the participation of health agencies, government officials, local residents, and the company.

But that is easier said than done in La Oroya, which is very much a company town. 3000 of the 35 000 or so local

residents work at the plant, while many others are employed by companies that do business with Doe Run.

The conflict has been cast in all-or-nothing terms, with company executives and government officials warning that plant might close if the deadline extension for the environmental mitigation plan is not granted. Company officials also say while it is the firm's responsibility to control emissions, it is the responsibility of the government to clean up slag heaps and other sources of pollution created before Doe Run took over the plant.

Community activists say they have been the targets of harassment ranging from insults to death threats. Even parents who worry about their children's health are reluctant to speak up, afraid that they'll be accused of endangering their neighbours' jobs and their town's economic survival.

Miguel Angel Curi, a dental technician, says some neighbours shied away from his business after he became active in the La Oroya Antigua Defense Front. But he stuck with the activist group, partly because the 2004 study showed that his curly-haired toddler, María de los Angeles, had a blood-lead concentration of 35.6 $\mu\text{g}/\text{dL}$.

He has considered moving out of La Oroya Antigua, but there are no buyers for houses there these days. Several

times a month his wife tries to take their three children to spend the weekend with her parents, who live farther from the smelter. "Living here in La Oroya isn't that simple", Curi says.

The 2005 CDC report noted that responsibility for environmental and public health was spread around various government agencies that lacked scientific data for developing policies to solve La Oroya's problems. The St Louis University study was meant to help fill that gap, but it has also underscored the extent of the problem.

Hugo Villa Becerra, a neurologist and former director of the EsSalud Hospital in La Oroya, worries about what Serrano called the "toxic cocktail".

"It's not clear whether these metals have a combined effect", Villa says. "We believe the combination may exacerbate health problems, but the extent to which that could happen is unknown."

Villa, who has practised medicine in La Oroya since 1979, specialised in neurology and occupational health because of the symptoms he encountered there.

Although the problems date back decades, Villa says, data are scant partly because doctors at the hospital have been discouraged from diagnosing lead poisoning.

Villa does not advocate shutting down the plant, however, because that would create a "significant social problem". Instead, he hopes the new study will raise awareness and leverage funds to upgrade the smelter.

Roman Catholic Archbishop Pedro Barreto Jimeno of Huancayo, whose archdiocese includes La Oroya, also hopes for funding to relocate the people who are most affected, a proposal that Curi and the defence front back—as long as residents are compensated for health problems and economic losses.

Meanwhile, Serrano and his team expect to return to La Oroya within the next several months to present the rest of their findings.

Barbara Fraser