Research Brief

Protecting Villagers From The Health Effects of Gold Mining

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The clang of stone on rock rings out over the West African landscape. Young boys and an old man sit on the hard ground, using simply fashioned hammers to crush gold ore–containing rocks into smaller pieces that will be fed into a noisy and dusty milling machine nearby. The hot sun beats down on their heads — and mine.

We are in the state of Zamfara in northern Nigeria, visiting a gold processing site outside the village of Dareta. I have returned to the same Hausa-speaking region of West Africa where I served with the Peace Corps nearly 20 years ago. And now, as a senior member of ELI's international team, I am in Nigeria to undertake an assessment of the environmental and public health impacts from local gold mining practices.

Artisanal and small-scale gold mining has long been practiced in northern Nigeria, but the exponentially increasing price of gold on the world market in recent years has sparked a huge jump in mining activity. While extremely profitable compared to the limited livelihood alternatives (namely, rain-fed agriculture and seasonal labor) in this poverty-stricken region of the Sahel, gold mining poses two major threats to public health and the environment: lead poisoning and mercury contamination.

In 2010, unregulated mining gave rise to an epidemic of childhood lead poisoning in Zamfara, with more than 400 children under the age of five dying within a six-month period. Many were exposed to toxic lead dust in their very own households, as women helped crush the rocks using the same mortars and pestles that they used to prepare food. While the processing activities have since moved outside the central village areas, miners are still exposed to lead dust from the dry milling machines and can carry dust back to their houses on their clothing and shoes.

Globally, mercury in artisanal and small-scale gold mining has been identified as the single largest intentional-use source of mercury pollution in the world, and has played a significant role in ongoing negotiations for an international treaty to address mercury emissions.

In Nigeria, use of mercury at the mining sites to separate out gold from ore — often by miners using their bare hands — poses grave threats to the environment and human health. Up to 95 percent of mercury from the processing of gold ore leaks into waterways and the surrounding environment, where it can be absorbed by living organisms. Miners heat the mercury-gold amalgam, driving off the mercury as a gas that is easily inhaled; this too poses a grave threat to human health.

Supported by a grant from the U.S. State Department, our ELI project is developing legal and policy recommendations that will help the government formalize and strengthen the unregulated artisanal mining sector.

In September, I spent nine days in Nigeria meeting with ministry officials, state government representatives, and domestic and international nonprofit organizations to learn more about artisanal gold mining. Accompanied by Charles Uka, an engineer with the Ministry of Mines who is also the UNEP focal point officer for artisanal and small-scale gold mining issues in Nigeria, I traveled to Zamfara to speak with people working on the ground — including the commissioner of environment for Zamfara, the director of Doctors Without Borders in Nigeria, and members of the Gold Buyers' and Sellers' Association, among others. These interviews highlighted the pressing need to help the miners form cooperatives and obtain title or formal access to the land on which they are mining, in order to better regulate the sector.

Drawing on our legal and policy research and field visits, ELI's assessment will propose innovative approaches for giving miners limited title or legal access to land under prior ownership; improving access to credit so that miners can invest in safer technologies; fostering improved federal-state coordination around mining issues; and vesting enforcement authority in local communities to encourage better mining practices.

We will vet our recommendations with key stakeholders, including mining communities, in order to ensure that what we propose can be effectively used by the Nigerian government to address the environmental and health impacts of mining. We hope to help implement the proposed reforms in Nigeria and to apply the lessons learned in our work with mining communities elsewhere in Africa and Latin America.