

# Silica dust in small-scale gold mining linked to silicosis and TB epidemic

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Silica dust hazards in large gold mines have been well documented, but the situation is far worse in small-scale gold mining according to a new study.

The new research in the article "Silica Exposures in Artisanal Small-Scale Gold Mining in Tanzania and Implications for Tuberculosis Prevention" shows that exposures to silica are more than two hundred times greater in small-scale artisanal mines than in larger mines. Hundreds of thousands of miners have already come down with silicosis and rates of tuberculosis (TB) among miners in Africa are approximately 5-6 times higher than in the general population.

This first ever study to measure silica exposures in small-scale [gold mining](#) operations was published online in the *Journal of Occupational and Environmental Hygiene*.

Researchers found that the average airborne crystalline silica levels in underground gold mining operations were 337 times greater than the recommended limit set by the U.S. National Institute of Occupational Safety and Health. Even miners working above ground had exposures that are four times the limit. Silica dust is a known cause of silicosis and lung cancer, and is strongly linked to TB and other lung diseases.

An estimated 15 million artisanal miners worldwide – many times more than are employed in formal sector mines – are working without any dust control measures.

Perry Gottesfeld, Executive Director of Occupational Knowledge International and the lead author of the study said, "Silica dust hazards are being ignored while thousands of miners die each year due to silicosis and the alarmingly high rates of TB in these mining communities."

"A recent global treaty has emphasized reducing mercury exposures among these gold miners, while [silica dust](#) hazards are overlooked although they are likely to cause much more death and disease," Gottesfeld added.

In sub-Saharan Africa, mining communities are experiencing an epidemic of TB due to the combination of silica exposures and higher background rates of people with HIV. These factors work together to multiply the risk.

"While we did the study in Tanzania, the risk for TB and silicosis is similar in artisanal mining around the world. Many times more people work in artisanal mining than in formal sector mines." Gottesfeld added.

Globally, more than \$3 billion a year is spent on diagnosing and treating TB.

Damian Andrew, an author of the study said that "The use of low cost methods to control airborne dust could significantly reduce exposures and the risk of TB and silicosis in these communities."

"Simple measures including water misting would be an effective method to greatly reduce silica dust exposures," he added.

The study also pointed out that more than half of all small-scale gold mining takes place in 18 of the 22 countries with the highest rates of TB. The World Health Organization (WHO) has prioritized these 18

countries as they account for 46% of all TB cases worldwide.

The authors conclude that ongoing efforts by governments and international aid agencies to address mercury hazards in small-scale gold mining should incorporate silica dust controls.

**More information:** "Silica Exposures in Artisanal Small-Scale Gold Mining in Tanzania and Implications for Tuberculosis Prevention."

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