

Abstract

An analysis of water-borne arsenic of mining communities in Zacatecas, Mexico

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Silver plays a crucial role within the global economy, with future market demand for silver expected to grow by 3% by the year 2025. The state of Zacatecas, Mexico is regionally one of the most important sources of heavy metal such as gold and silver in the world, containing the second largest silver mine in the world, and numerous smaller mining operations throughout the state. The mining industry is renowned for its intense use of water, requiring immense quantities of water throughout the extraction and purification process. Beyond extensive water use, mining operations often raise concerns due to the potential for pollutants to make their way into nearby soils, air and water resources. In the case of polymetallic mines, especially those for silver, arsenic contamination is of particular concern. Between 2013 and 2022, the National Water Commission of Mexico collected water quality samples from across the state of Zacatecas. I present a preliminary analysis of the presence of arsenic in these water samples, and their potential relationship with the state's prolific silver mining industry.

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