



## Arsenic contamination in groundwater in Zimapan, Hidalgo, Mexico

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### ABSTRACT

Arsenic contamination in groundwater has been detected in several studies in the region of Zimapan, Mexico. Arsenic contamination sources have been reported as natural and anthropogenic. In this study, the variation in concentrations of pollutants in mineralized zones, sedimentary rocks and anthropogenic activities was determined. Arsenic and lead concentrations of 5.0–248.0 and 0.10–132.0  $\mu\text{g L}^{-1}$  were observed in groundwater, respectively. Water mineralization was medium to medium high. Conductivity values between 198.0 and 970.0  $\mu\text{S cm}^{-1}$  were determined. Some contaminated wells showed conductivity values as much as 1,700  $\mu\text{S cm}^{-1}$ . Open wells near mining waste showed conductivity values up to 1,485.0  $\mu\text{S cm}^{-1}$ . Groundwater showed neutral pH and alkalinity tendency. Arsenic concentrations were low in the volcanic aquifer, and high in the aquifer with carbonate rocks. The average total arsenic concentration was 47.8  $\mu\text{g L}^{-1}$ . Arsenic concentrations of 20–100  $\mu\text{g L}^{-1}$  were observed in 93% of the sampled points; concentrations greater than 50  $\mu\text{g L}^{-1}$  were found in 20% of the total. Forty-seven percent of the evaluated points correspond to samples associated with carbonate rocks.

*Keywords:* Arsenic; Antimony; Groundwater quality in Zimapan; Hidalgo

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