

## **Recent studies of arsenic mineralization in Iran and its effect on water and human health**

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Very limited information exists about the source, distribution, occurrence, and human-health effects of arsenic-contaminated surface waters and groundwaters in Iran. Yet the geological conditions would suggest a strong probability of human health risks from As because of several orogenic Au deposits from the Sanandaj-Sirjan Zone of the Zagros Mountains and the strong relationship of arsenic with Au mineralization in particular tectonic settings. Arsenic poisoning is prevalent in Kurdistan Province, identified in 1986 when a woman in Bijar, lost her legs from gangrene following intense skin. A positive correlation exists between As in hair and As dosage in drinking water for residents of Bijar. Reported As concentrations in drinking water for several villages in this area are in the tens to hundreds of µg/L and the highest concentration greater than 1 mg/L. About 530 drinking water sources in Bijar and Qorveh were sampled and As concentrations ranged from 42 to 1500 µg/L.

At least five Au ore deposit types from have been identified: orogenic, epithermal, Carlin-type, intrusion-related, and volcanic massive sulphide. The most common mineral sources of arsenic are arsenopyrite and arsenian pyrite in these deposits. The Zarshuran Au mine in NW Iran contains abundant orpiment and realgar. Hot and cold springs also occur with high concentrations of As (0.2-1 mg/L) and travertines precipitated from these springs contain high As concentration. Takab-Qorveh groundwaters have As concentrations of 0.0004-0.689 mg/L, primarily as arsenate.

Tying the water quality conditions to the geologic framework is essential for understanding the sources and extent of As contamination in water bodies and to guide investigators to other high risk areas.