

## **Geogenic arsenic in Iran: Its sources, distribution and health effects**

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Iran is a country that was the center of hot research and study on environmental distribution and impacts of arsenic in previous decade. Anthropogenic arsenic and its sources and distribution has not been studied in detail and its probable occurrence may be attributed to some As-bearing pesticide in agricultural areas and its application as a rodenticide especially in cities and also rural areas against mice.

However, there is some information about natural distribution of arsenic in soil and water resources in Iran. Arsenic which may derived its name from a Persian term (Zarnik) for its minerals orpiment and realgar has been mined in Zarshuran Au-As mine in NW Iran for more than 2000 years. There are also some arsenic mines in other parts of Iran especially in NW and NE Iran. Zarshuran, Kouh Sorkh and Sari Gunay (Dashkasan) are among the main arsenic mines is which As is accompanied by gold. Local people in these areas are aware on health impacts of arsenic and they even prevent their cattle to drink waters draining from mining areas. Beside the mines, thermal springs were found to be an important and influential source of arsenic in Iran. They are mostly related to Neogene and Quaternary young volcanism and they show the last expressions of volcanic activities. Concentrations higher than 5000 µg/L was detected by the first author in NW Iran. In west and northwest Iran, groundwater resources are also contaminated by arsenic to concentrations of about 400 to 1180 µg/L in rural areas and concentrations lower than 60 µg/L in urban areas. People in these areas with chronic exposure to arsenic show diabetes mellitus, hypertension, and hyperkeratosis and skin pigmentations frequently and some cases of chromosomal abnormalities and kidney cancers have been reported.

Therefore, the source of arsenic in water resources and thermal springs and also in soil resources in these areas is attributed to recent volcanism and its subsequent hydrothermal activities.