

The security of nations depends on the security of aquifers

H. Mohammadzadeh

*Department of Geology, Faculty of science, Ferdowsi University of Mashhad, Mashhad, Iran
Groundwater and Geothermal Research Center (GRC), Water and Environment Research
Institute, Ferdowsi University of Mashhad, Mashhad, Iran*

*Corresponding author: mohammadzadeh@um.ac.ir

Abstract— The population growth, the development of agricultural and industrial sectors, along with the draughtiness, have intensified the exploitation of groundwater from aquifers, which causes many problems worldwide, especially in Middle East region. Since the sustainable development, public health and the security of nations, especially in arid and semi-arid areas including Iran, depend on the amount of accessible fresh water, it is very necessary to examine the severity of the crisis and the security of aquifers. Groundwater resources in aquifers with a volume of about 60 times greater than surface water resources (rivers and lakes) are among the most valuable national resources, which, in addition to supplying water needed in agriculture and industry, provides significant part of water needs for drinking and health. In this article, while examining Iran's water situation in comparison with the countries of the region in terms of the percentage of dependence on groundwater resources [1, 2], the severity of the crisis of the Mashhad aquifer was evaluated using quantitative and qualitative indices. Finally, solutions to reduce water stress has been provided.

Key Words: Security, aquifer, water crisis

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48. The security of nations depends on the security of aquifers

Hossein Mohammadzadeh

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49. Study the drinking and irrigation water quality in a dam basin; case study, Shirin Darreh dam, NE Iran

Maryam Tajbakhshian

Abstract: In this study quality of 13 water samples, gathered from Shirin Darreh dam basin, NE Iran, (6 well waters, 6 spring waters, 1 dam reservoir) was determined for irrigation and drinking purposes. pH, electrical conductivity (EC), total dissolved solids (TDS), and main cations and anions were determined, and salinity (EC), sodium hazard (sodium percentage (SP) and Kelley's ratio (KR)) and carbonate hazard (residual sodium carbonate (RSC) and residual sodium bicarbonate (RSBC)) were used to assess irrigation quality. Water quality for drinking was specified and based on WQIDD. Mainly, water samples were doubtful, good, suitable, and good based on EC, SP, KR, RSC, and qualified for drinking. Geological content of the study basin generally composed of soluble materials (54%) were poor as the most important factor to release the main ions to the water and decrease the water quality to irrigation and drinking purposes.