Assessment of pollution rate and concentration of heavy metals contamination of water Resources in Fariman Ophiolite region, NE Iran

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Heavy metals in water resources can have detrimental effects on human and other Animals health. In this study, the quality of water resources has been considered in terms of the pollution of heavy metals in the ophiolitic region of Fariman in the northeast of Iran.

In this study, physical properties of the water have been considered by the concentration of different non-metallic cations and anions (such as Na^{+}, Mg^{2+}, Ca^{2+}, Cl^{-}, SO_4^{2-}) and EC, TDS, pH parameters in 18 stations. Also by using statistic methods such as Pearson coefficient, cluster analysis diagram and principal component analysis the correlation between the elements has been investigated and different pollution indices such as MI and HPI have been calculated.

The investigation of water quality by Schuler diagram suggest good to medium water quality. According to Piper diagram most of the region water was in bicarbonate magnesium rang, and some other were in bicarbonate calcium, bicarbonate sodium and chlorosodic range. Wilcox diagram shows more conduction of the region water. By comparing heavy metals concentration with WHO standard, it was cleared that the rate of Chrome, Iron, Aluminium and Boron of the samples was beyond the standard.

Conclusion: Ophiolite units and pyroclastic as two main source play roles in the entrance of heavy metals to water resources. According to pollution indices of MI and HPI water resources of the region have been polluted by heavy metals and are in undrinkable range.

Keywords: Water pollution, Metal index MI and HPI