

The determination of water chemical quality of cisterns in rural areas of Golestan province

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Abstract

Background&Objective: Collection and Storage of roof rainwater usually has been used from long time ago in Iran and many other countries. Many residents in rural areas of Golestan province (Turkman Sahra) are providing partly of drinking and municipal water by this way. This study was purpose to determine the chemical water quality and detecting of probable contamination resources in cisterns.

Materials&Methods: 140 samples were collected and analyzed for determination of chemical parameters during three seasons. Alkalinity by titrometric, hardness by E.D.T.A, Cl⁻ by Mohr and No₃⁻ & PO₄⁻³, by DR-2000 HACH and heavy metals by atomic absorption spectrometry (model 2380 Perkins-Elmer) were determined. These results were analyzed by SPSS and Kolmogorov-Smirnov test.

Results: The chemical parameters such as: acidity, electrical conductivity, alkalinity, hardness, chloride, nitrate and manganese had desired limits but PO₄⁻ in 15%, Fe in 12%, Pb in 51% and Cr in 16% were exceeded the referrence level.

Conclusion: Any of water cisterns were unfavorable for drinking because some chemical parameters and especially the heavy metals were exceeded the normal level. The probabe causes of the normal level chemical contamination water in cisterns include infiltration surface and agricultural waters, storage of Gorganrood water and precipitation of air pollution.

Key Words:

Cistern- Chemical quality- Rain water- Golestan province