The investigation of chemical quality and stability indices of drinking water in rural areas of Taybad City in 2015-16

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Abstract

Background & Aim: Corrosion is one of the most complicated and costly problems related to the drinking water supply that can influence the health of consumers, the general acceptance of a water resource, and the costs of water supply. Scaling also causes problems such as clogging and head loss in drinking water networks. The aim of this study was to determine the chemical quality and stability indicators (scaling and corrosion potential) of rural drinking water supplies of Taybad city in 2015-2016.

Methods: In this descriptive/cross-sectional study, 96 water samples (from 8 wells) were gathered within 12 months and analyzed for physicochemical parameters. Then scaling and corrosion potential of water supplies was determined based on Langelier saturation Index (LSI), Ryznar Stability Index (RSI), Aggressive Index (AI), and Puckorius Scaling Index (PSI).

Results: The results showed that the quality of some wells was below the acceptable limits in terms of TDS and hardness. However, other parameters such as fluoride, nitrite, and nitrate, were in standard range. In addition, the sampling stations were 50% corrosive and 50% scaling based on LSI, 50% corrosive and 50% neutral based on RSI, 25% scaling 75% neutral based on AI, and 37.5% corrosive, 25% scaling, and 37.5% neutral based on PSI.

Conclusion: According to the findings, water in the study region is not in neutral state; thus, stabilizing the water before entering the distribution network is recommended as an important measure to control scaling and corrosion phenomenon.

Keywords: Drinking water, Physicochemical quality, Corrosion, Scaling

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