

Evaluation of Corrosion and Scaling Potential in Water Distribution System of Torbat Heydariyeh City in 2012

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Abstract

Background & Aim: Corrosion and scaling in water distribution system are very important as a matter of financial and health issues. This study was carried out to evaluate the corrosion and scaling potential in the water distribution system of Torbat Heydariyeh city in 2012.

Methods: This cross-sectional/ descriptive study used cluster sampling in which the city was divided into 15 clusters. 6 subjects per each cluster (total 90 subjects) were selected via random sampling during 2012. Samples were analyzed through standard methods. To determine the corrosion and scaling potential, five indices including Langlier Saturation Index (LSI), Ryznar Stability Index (RSI), Puckorius Scaling Index (PSI), Larson-Skold Index (LS) and Aggressive Index (AI) were studied.

Results: Based on the results, Rayzner, Langelier, Pokurious, Larson-Skold Ratio and Aggressive indices are 7.72 (± 0.2), 0.021 (± 0.12), 7.65 (± 0.3), 1.72 (± 0.45), and 12.05 (± 0.12), respectively which indicate 40, 100, 100, 94, and 33 percent of water in distribution system is corrosive according to RSI, LSI, PSI, LS and AI indices.

Conclusion: Overall, water is slightly corrosive in distribution system of Torbat Heydariyeh city. Thus, it is recommended to perform measures such as pH, alkalinity, hardness adjustment to mitigate corrosion and corrosion by-products.

Key words: Drinking water, corrosion, scaling, water stability indices