

## عنوان مقاله:

Investigation of Corrosion and Scaling Potential in Drinking Water in Rafsanjan, Iran

## محل انتشار:

فصلنامه بهداشت محیط و توسعه پایدار، دوره 7، شماره 2 (سال: 1401)

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## خلاصه مقاله:

**Introduction:** Corrosion and scaling are important factors affecting drinking water quality, causing health and economic problems. This study aimed to investigate the indicators of corrosion and scaling in Rafsanjan drinking water. **Materials and Methods:** The present descriptive cross-sectional study was conducted in winter ۲۰۱۸ and spring ۲۰۱۹ in Rafsanjan. The ۵۶ samples were randomly taken from the drinking water distribution and transmission networks. Physicochemical parameters, such as pH, temperature, total dissolved solids (TDS), total hardness (TH), calcium hardness (CH), electrical conductivity (EC), and alkalinity were measured. Finally, corrosion and scaling indices, including langelier index (LI), ryznar index (RI), aggressiveness index (AI), and Puckorius index (PI) were calculated and analyzed. **Results:** The mean temperature, pH, CH, TH, TDS, alkalinity, and EC were  $17.79 \pm 0.80$  °C,  $8.08 \pm 0.11$ ,  $56.34 \pm 2.72$  mg/L.CaCO<sub>3</sub>,  $140.86 \pm 6.81$  mg/L.CaCO<sub>3</sub>,  $530 \pm 110$  mg/L,  $181.21 \pm 13.65$  mg/L, and  $840 \pm 180$  μs/cm, respectively. The mean corrosion and scaling indices, including  $LI = 0.18 \pm 0.12$ ,  $RI = 7.72 \pm 0.14$ ,  $AI = 12.09 \pm 0.11$ , and finally  $PI = 7.96 \pm 0.10$  were obtained. **Conclusion:** Based on the obtained data, drinking water in the transmission and distribution network of Rafsanjan has scaling properties. Water scaling and deposition causes problems, such as blockage of water transmission and distribution pipes, reduction of flow rate and increase of pressure drop in the network, and finally increase of water facilities operation costs. Therefore, measures should be considered to control the scaling of water in this region.

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