

Quality of desalinated blended seawater in Dammam.

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Abstract

A study aimed at defining the concentrations of sodium and fluoride and the corrosiveness of Dammam drinking water is described. The study involved a search of the pertinent literature. Ten sampling locations, in Dammam, were selected for this study. Corrosion field studies were conducted by installing corrosion specimens of galvanized iron at two different locations. Laboratory studies were undertaken to study the effect of water quality parameters, such as pH, DO, TDS, velocity and temperature on corrosion. Galvanized iron and PVC specimens were used in the laboratory studies. Results of field and laboratory studies are presented and analyzed.

The study indicated that sodium concentration in Dammam drinking water was at an average value of 110 mg/l which is higher than the standard established by the National Academy of Sciences (100 mg/l). Fluoride concentration was found to be at an average value of 0.02 mg/l. This value is less than the standard established by the Government of Saudi Arabia (0.6-1.0 mg/l).

Corrosion field studies showed that Dammam drinking water is corrosive and pitting was the major type of corrosion which could be observed under the scanning electron microscope (SEM). Laboratory studies showed that water quality parameters have an effect on corrosion of galvanized iron pipes. PVC pipes showed reliability against corrosion.