

The Impacts of Geological Formations on the Quality of Groundwater in Khaf Plain Aquifer (North East Iran)

SHIVA TORSHIZIAN¹

¹ Department of Pharmacy, Eastern Mediterranean University, Famagusta, North Cyprus

Khaf plain is one of the sub-catchments of the central Kavir, in Khorasan Razavi Province, North East of Iran, which experiences semi-arid to arid climate. The quality of water in Khaf aquifer is very low, unacceptable even for agricultural use. One of the main factors that deteriorate the quality of groundwater is local geology which comprises mostly sedimentary rocks and in particular evaporates. In order to study, 52 water samples were collected from different parts of the aquifer in 2015 and were analyzed for acidity, electrical conductivity and major ions. In the second step, ion distribution maps were prepared and geological characteristics were rechecked in the field. There is a clear impact of geology on the distribution of ions. A combination of ions cross plots and saturation indices of Gypsum, Halite, Calcite and Dolomite minerals show that the dissolution of these minerals and weathering of Silicate minerals is commonplace in the aquifer. Due to high concentrations of Sodium in the groundwater of the area, reverse ion exchange is one of the chemical processes controlling the chemical composition of groundwater.

Key Words: Groundwater, Khaf Aquifer, Iran