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HYDROGEOCHEMICAL CHARACTERISTICS AND ASSESSMENT OF WATER QUALITY IN DHEKU BASIN, AURANGABAD, INDIA

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Abstract

An attempt has been made for the first time in this region to assess the quality and the suitability of groundwater for drinking and irrigation purposes. In order to attend to this objective, a total of thirty eight representative ground water samples were collected and analyzed for major ions such as pH, total dissolved salts, electrical conductivity, total hardness, calcium, magnesium, sodium, potassium, chloride, sulphate, carbonate, bicarbonate, fluoride, nitrate and trace metals like Zinc (Zn), copper (Cu), lead (Pb), nickel (Ni) and manganese (Mn). Based on the chemical analyses, irrigation water quality parameters like sodium absorption ratio (SAR), residual sodium carbonate (RSC), Kelly Index (KI) and sodium soluble percentage (SSP) were calculated. The suitability of the water from the groundwater sources for drinking purposes was evaluated by comparing the values of different water quality parameters with World Health Organization guideline values and Bureau of Indian Standards. Preliminary hydrochemical characterization shows that several water quality parameters of the samples are exceeding the maximum permissible limits of drinking water standards in some samples. The correlation of the analytical data has been attempted by plotting different graphical representations such as Wilcox, and US Salinity Laboratory for the classification of water, and results show that almost all of the sample groundwater is fit for irrigation. Groundwater quality in Dheku basin is governed by natural geology and anthropogenic activities.

Keywords: Groundwater Quality, irrigation, Nitrate, Dheku basin, India

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