HYDROCHEMICAL ASSESSMENT OF SUITABILITY FOR DRINKING PURPOSE IN LALSOT BLOCK, DAUSA DISTRICT, RAJASTHAN, INDIA

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Abstract

Hydrochemical analyses of groundwater samples from 14 wells was undertaken in rural areas of Lalsot Block in Dausa district, Rajasthan State for water quality evaluation and suitability for drinking purpose, using various water quality parameters and the standard methods of physico-chemical analysis of water. The results show the following concentration ranges: pH (8.00-8.50), EC (360-2320 $\mu$S/cm), TDS (258-1522 mg/l), TH (195-350 mg/l), $\text{Ca}^{2+}$ (20-44 mg/l), $\text{Mg}^{2+}$ (33-67 mg/l), $\text{Na}^+$ (27-425 mg/l), $\text{K}^+$ (2-18 mg/l), $\text{HCO}_3^-$ (134-708 mg/l), $\text{CO}_3^{2-}$ (24-288 mg/l), Cl$^-$ (35-319 mg/l), $\text{NO}_3^-$ (01-203 mg/l), F$^-$ (0.36-3.64 mg/l) and $\text{SO}_4^{2-}$ (50-166 mg/l). Most of the parameters analysed are within the permissible limits as per the guideline set by both national (BIS, 2012) and international (WHO, 2011) bodies for drinking water, except for TH and F. Based on TH all the samples fall in very hard category a and majority of the samples (57%) have F content that exceeds the permissible limit. The ionic dominance for major cations and anions is in the order: Na$^+>$Mg$^{2+}$> $\text{Ca}^{2+}$> $\text{K}^+$ and $\text{HCO}_3^->$Cl$^-$> $\text{CO}_3^{2-}$> $\text{NO}_3^-$> $\text{SO}_4^{2-}$>F$^-$, respectively. The groundwater chemistry of the study area samples allows their classification as the ‘mixed type’ hydrochemical facies. This study reveals that corrosivity ratio ranges from 0.18 to 2.10 and in this context, a study has been conducted to analyse various factors that involve abnormal ratio of corrosive tendencies.

Keywords: Water Chemistry, Drinking water, Lalsot block, Rajasthan, India