Indian Journal of Ecology (2019) 46(2): 260-269

Manuscript Number: 2827
NAAS Rating: 4.96

Physico-chemical Analysis of Ground Water for Irrigation and Drinking Purposes around Moth Block of Jhansi District, Uttar Pradesh, India

Naseem Akhtar and Shive Prakash Rai

Department of Earth Science, Bundelkhand University, Jhansi-284 128, India
E-mail: akhtarn58@gmail.com

Abstract: The aim of the research work is to determine the physicochemical characteristics of groundwater and its suitability for drinking and irrigation purposes in Moth Block of Jhansi District in Bundelkhand region. Analytical results of physicochemical analysis showed fluoride content was higher than permissible limit in 13 samples and nitrite content higher in Pandauri and Kandaur. The obtained results were compared with International and National standards as World Health Organization (1997) and Bureau of Indian Standard (2012).The concentration of pH in groundwater was from 6.79-7.70 with average of 7.34 which indicates that it suitable for drinking water. A comparison of groundwater quality parameters in relation to specified limits for drinking water shows that the concentrations of turbidity, F-, SO_4^-, Cl^-, Na^+, K^+, Ca^{2+} and Mg^{2+} were lower than the acceptable limits in few water samples. The good quality of groundwater of the study area measured with various irrigation indexes estimation of physiochemical parameters, US Salinity Laboratory (USSL) Classifications and Sodium Adsorption Ratio (SAR).The US salinity diagram show that the intermediate to high saline groundwater samples belong to C3S1 and C2S1 show that intermediate to low alkaline water. After all, US Salinity diagram shows that the mostly groundwater samples were suitable for irrigation purpose and lies within the acceptable limit except at few locations. In addition, few parameters are alarming in comparison with the BIS (2012) standards for drinking uses, thereby suggesting the need for treatment and precautionary measures for groundwater use. The water can be utilized for drinking after treatment.

Keywords: Groundwater, Physico-chemical parameters, Anions and cations, Irrigation and drinking purposes