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Application of water quality index for ground water quality assessment in mining talukas of Goa

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An attempt has been made to understand the ground water quality by using the water quality index (WQI) in the mining region of Goa. WQI, a technique of rating water quality, is an effective tool to assess spatial and temporal changes in ground water quality. Forty five groundwater samples were collected from open and tube wells during summer, monsoon, post-monsoon and winter seasons. The groundwater samples were subjected to comprehensive physio-chemical analysis involving major cations (Ca^{2+}, Mg^{2+}, Na^{+}, K^{+}, Fe^{2++}) anions ($HClO_3$-, Cl, SO_4^{2}-, NO_3-, F-, PO_4^{3}-) besides general parameters (pH, EC, TDS, alkalinity, total hardness, color, turbidity). The water quality index rating was calculated to quantify overall water quality for human consumption. For calculating WQI 10 parameters, namely pH, TDS, total hardness, chloride, nitrate, turbidity, fluoride, iron, calcium hardness, magnesium hardness were considered. The values of WQI have been affected mainly by the concentration of dissolved ions (F, NO, Ca and Mg) in ground water. Concentration of dissolved solids found to be more during monsoon season. It may be due more seepage and movement of ground water due to excessive rainfall there. The values of WQI of the samples were found in the range of 8-12 for all the seasons and considered to be in the very good category.

Biography

Rakesh Kant Kamal is pursuing PhD from Indian School of Mines, Dhanbad Jharkhand. Currently he is working as Junior Research Fellow (JRF) in the Department of Environmental Science and Engineering, ISM, Dhanbad.

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