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Hydrochemistry of Groundwater in Suketi River Basin, Himachal Himalaya, India

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Abstract

Hydrochemical studies of groundwater from the Suketi river basin is carried out by collecting 31 water samples from various sources including dug wells, tube wells, bore wells and springs during pre-monsoon (May) and post-monsoon (November) seasons of 2009. Five surface water samples from the perennial rivers of the basin were also collected. These water samples were analysed for 14 physicochemical parameters. Results of chemical analysis indicate that groundwater in the Suketi river basin is fresh and mildly alkaline in nature. The overall quality of groundwater is suitable for drinking, domestic and irrigation purposes, except in one bore well at Pabu (B-6) where high fluoride content of 4.2 mg/l and 2.2 mg/l was detected, during pre- and post-monsoon seasons of 2009, respectively.

Relatively higher concentration of nitrate is observed in the groundwater samples from spring (S-7) and bore well (B-3), which are located in the densely populated towns of Mandi and Rewalsar, respectively. The NO_3 concentration in groundwater at these locations varies from 37 mg/l to 32 mg/l, during pre-monsoon and 36 mg/l to 27.9 mg/l, during post-monsoon seasons of 2009, respectively, that can be attributed to the local contamination from anthropogenic sources. Study of ionic concentrations of water samples reveals that the spring and river waters have identical chemistry, which suggests that the shallow aquifers in the mountainous terrain may possibly contribute groundwater into the drainage system of Suketi river basin.

Keywords: Groundwater quality, Hydrochemistry, Suketi river basin, Himachal Himalaya, India.