

Physicochemical studies of ground water in the village Dharampur situated on the bank of river Jamuna in Jalaun district (Uttar Pradesh) India

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Abstract

The present investigation deals with the determination of quality of well, tube well and river waters taken from different wells and tube wells situated at a distance of ½ km from one another in Dharampur village near Kalpi town in Jalaun district, Uttar Pradesh. The investigations were made in pre-monsoon, monsoon and post-monsoon seasons of 2013-14 to evaluate the suitability of water for domestic and agricultural purposes. Twenty ground water samples including open wells and bore wells and river were analyzed for pH, EC, Total NH₃, Total hardness, TDS, Chlorine, Na, K, Total phosphate, sulphate, DO and COD. The maximum values for pH (9.70), EC (2850), T_{NH3} (0.69), T_H (1705), TDS (1716), Cl (666), SO₄ (415), PO₄ (3.20), Na (290) and K (84) were found in pre-monsoon but maximum values for DO (11.18) and COD (78.56) were recorded in post-monsoon only. All the above values are in mg/L except EC (in µs) and pH. In general water of all the wells can be safely used for drinking and irrigation purposes. Care must be taken to use this water for drinking purpose in pre-monsoon season. The attempts were also made to find out reason for degradation of water quality in some of the wells.

Keywords: Ground water, water quality parameters, Uttar Pradesh

Introduction

Water is among the most precious gift of nature given to mankind. Both the quality as well as quantity of water is equally important for domestic as well as agriculture and industrial purposes. India is the vast country but fortunate enough to have numerous rivers big and small which traverse the land in practically every direction carrying the much needed water through dry and thirsty lands. Some years back our major water sources were relatively free from pollution but at present marked deterioration in water quality has come to notice in a number of locations.

Drinking water has to meet certain fairly stringent quality standards and water quality is also important for agriculture and industrial uses. In recent time, on account of increase in population, urbanization and industrialization, there is an ever increasing threat to the quality of water in rivers, lakes and ground water. Due to industrialization day by day more and more industrial waste and effluent enters into earth which pollute river as well as well water. Some times water becomes so polluted that its

use becomes harmful even crops. It thus becomes necessary to test the quality of well water in the region where it is used for drinking and irrigation purposes. It was decided to test the well and river water in the locality and farms situated on the bank of river Jamuna in village Dharampur near Kalpi town in Jalaun district.

Materials and methods

The area of investigation Dharampur, very near to Kalpi is located at 26.12°N and 79.73°E. It has an average elevation of 112 m above mean sea level. Dharampur is well known village because of adjacent to Kalpi which is also known as the birth place of Ved Vyas Ji. Kalpi was and still is a centre trade of local trade (principally in grain, pulses, ghee and cotton) with a station on the North Central Railway (India) line from Jhansi to Kanpur. Dharampur near Kalpi is 32 km. away from Orai (Jalaun) on Kanpur Bus route. Main business here is agriculture, manufacture of hand made papers, powerloom cloths, sugarcane, jawar, wheat, barley etc. Recently the relevant work has been done by Bali *et al.* (2015) and Sharma &