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ORIGINAL ARTICLE

Study of Ground water quality at Aligarh District

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ABSTRACT

Water is essential for all living organisms for their existence and metabolic process. Unethical human intervention in ground water resources induces degradation of the quality. In many instances groundwater is used directly for drinking as well as for other purposes. Hence, the evolution of ground water quality is extremely important. In this study 5 sites Dr marked for analyzed to water quality.

Key words: *Drinking water, analyzed, quality, ground, metabolic.*

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INTRODUCTION

Water is most abundant on our earth and essential for existence and metabolic process in living being body. So, it's also called matrix of life because it is an essential and is the medium from which life evolved. It is well known that human health is survival depends upon use of uncontaminated and clean water for drinking and other purposes. Ground water is a good source of fresh water available on earth, due to its relatively low susceptibility to pollution in comparision of surface water and its large storage capacity.
Water pollution is a serious problem in world and in developing countries especially in India on account of huge population. The contaminants are entered in body of organisms via absorption and other routes, which goes deep in tissues and affect physiology, biochemistry and metabolism of organism. The present study is aimed to analyze the underground water quality at Aligarh.

STUDY AREA

In north India, the Aligarh is an ancient city in Uttar Pradesh state, is situated in the middle of two large and famous Rivers Ganga and Yamuna River, at a distance of 130 km. southeast of Delhi on the Delhi Howrah rail route and the grand trunk (G.T. Road) road. Aligarh lies between latitude $27^0$54' and 28^0 north and longitude is 78^0 and $78^0$5' east. The Aligarh city is spared over an area of about 40.5 km^2. The Karwan River in the west and the Senger River in the east and is part of central Ganga basin. This city an important center of lock smithy and brassware manufacturing environment quality of the area deteriorates manning a result of increasing industrial activity.

MATERIAL AND METHODS

Present investigation was undertaken to estimate the physico-chemical properties of the ground water at 10 sited which were selected in and all-around corner of Aligarh district. The samples were collected as per the standard methods prescribed for sampling. Plastic bottles of 1.5 liter capacity with stopper were used for collecting samples. Samples

analyzed for pH, turbidity, total dissolved solid (TDS), hardness, chlorides, sulphates, total alkanity, iron, calcium, magnesium, nitrates in the laboratory.

The pH was measured by digital pH meter. The water hardness, calcium, magnesium, chloride, total alkanity, temperature etc. were measured with standard methods given in American Public Health Association (APHA, 1998) and Saeedi, *et. al.*, (2010). Acceptable and maximum limits usable water was shown in table- 1.

Table 1: WHO, ICMR and ISI Standard for drinking and domestic use water

Sr. No.	Parameters	Acceptable	Maximum
1.	Color	4.5	25.0
2.	pH	7.0-8.5	6.5-9.2
3.	TDS (mg/l)	200	600
4.	Cl (mg/l)	200	1000
5.	SO_4 (mg/l)	200	500
6.	F (mg/l)	1.0	2.0
7.	NO_3 (mg/l)	25	45
8.	Ca (mg/l)	75	200
9.	Mg (mg/l)	30	150
10.	Fe (mg/l)	0.1	0.1
11.	Total Hardness (mg/l)	100	1500
12.	Temperature (^{0}C)	12	18

Table 2: Physico-chemical Parameter of ground water at different sites in Aligarh district

Locality	pH	TH (mg/l)	Ca (mg/l)	Mg (mg/l)	Cl (mg/l)	Temp. ^{0}C)
Rasik Tower Colony	7.7	520	30.03	119.55	613.44	5-9
RAF- Road	7.8	326	50.03	67.33	478.72	4.9-8
Rambagh Colony	7.9	610	52.03	138.14	403.28	4.1-7.5
PAC38 Battalion	8.0	1070	121.08	107.24	1824.40	4-7.6
Joraver Nagar	8.1	430	120.08	25.62	414.64	3.9-8
Talaspur	8.3	420	90.04	85.39	942.64	3.0-6
Suryvihar Colony	8.5	1300	58.05	293.27	2288.36	4.0-9
Jamalpur	8.8	1040	56.04	240.21	2003.8	3.8-8.2
Iqra Colony	9.0	2900	1636.33	11263.67	2885.04	4.2-9
Dodhpur	8.9	870	105.21	285.42	1885.62	5-9

RESULTS AND DISCUSSION

The results revealed that the ground water of different 5 locations during study period area was in excellent quality of water where water quality index ranges from 0-25 best suitable for human consumption. The remaining areas of sample are ranging between good to moderately contaminate.

Results also show that pH was higher obtained at Iqra colony while minimum was noted at Rasik Tower apartment colony. RAF road, Jamalpur, Iqra colony and Dodhpur crossed the acceptable limits. In case of total hardness, maximum was at Iqra colony while minimum at RAF road, Iqra colony value crossed the acceptable limits. Calcium hardness was highest at Iqra colony and lowest at Rasik Tower colony; here again Iqra colony crossed the acceptable limits. Magnesium hardness was highest at Iqra and lowest at Joraver Nagar; Jamalpur, and Iqra crossed the acceptable limits. Chloride was highest at Iqra and lowest at Rambag colony, PAC38 Battalion, Suryvihar colony, Jamalpur, Iqra and Dodhpur showed higher than acceptable values. Temperature remained within the acceptable range in all locations while maximum at Jamalpur.

The quality of ground water at Iqra was thus found unsuitable for drinking and domestic use. Rasik Tower colony, RAF Road, Rambagh, PAC38 Battalion and Talaspur shown the values under acceptable range. Hence, it is tolerable to use their water for drinking and domestic purposes. The study emphasizes the urgent need for regular underground water

quality monitoring to assess pollution activity from time to time for taking appropriate measures in time to mitigate the intensity of pollution activity. Augmenting the ground water resources by recharging the ground water aquifers through rain water harvesting and thus chemical parameters in a very important measure. Public awareness program should be initiated to create a sense of awareness to save water around their habitants.

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