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Ground water quality assessment of old Aurangabad city

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ABSTRACT

In the present paper we report the ground water quality of old Aurangabad. The water samples were collected from six sampling sites and their Physico-chemical parameters such as pH, Conductivity, Chloride, Sulphate, Temp. Turbidity, DO, TDS, COD etc. the water quality is found to be good in some cases but some of the parameters were above the permissible limit.

Key words: Old Aurangabad city, Water quality parameters, Ground water.

INTRODUCTION

Water is one of the most important commodities which man has exploited than any other resources for the sustenance of his life. Most of our demands for water are fulfilled by rainwater which gets deposited in surface and ground water resources. Though, water is continuously purified by evaporation and precipitation, pollution of water has emerged as one of the most significant environmental problems of recent times. The cause of such a situation is many but the quality of water is deteriorated day by day to rapid increase in urbanization and industrialization [1-3]. Some of the major adverse effects have arised from construction of reservoirs, surface water irrigation and deforestation, industrial and urban waste disposal. Water quality deterioration has made potable water resource scarcer and endangered for plant and animal life[4].

Generally ground water is clear and colourless as it percolates from various levels. During percolation, it dissolves inorganic salts. Secondly, it was also observed that generally ground water does not have certain bacteria until contamination because they are filtered out while percolating through subsoil. In order to monitor the pollution status at Old Aurangabad city and as part of on going research in the relevant field[5-6] we decided to study the assessment of ground water quality of this area.

In the present work, various water samples of tube wells of Old Aurangabad city have been analysed. Many authors[7-9] have studied the Physico-chemical characterization of ground water of different parts of the worlds. The objective of present study was to determine the quality of water supplied to the rural community in order to estimate the health implications.

MATERIAL AND METHODS

EXPERIMENTAL: Water samples were collected in polythene bags of tube wells from Old Aurangabad city during Jan-2013 to Dec-2013. The temperature was recorded at the Spot. The chemicals used for analysis were analar grade and the solutions were prepared in double distilled water. The solutions were standardised as per methods given in literature. Analyses for Physico-chemical parameters were done by following method described in the literature [10-12]. Hardness is determined by EDTA-titrimetric methods, chloride by Mohr's methods and DO by Winkler's method, Conductance is measured by conductivity bridge (Model No.EQ-660, Equiptronic).

Temp: All the metabolic and physiological activities and life processes by aquatic organisms are generally influenced by temperature. It accelerates chemical reactions. In the present study the average temperature in tube well is ranged from 27^0C to 29.4^0C. The temperature was recorded at the sites only.

pH: It is observed that a pH value varies between 6.86 to 8.11 and these are within permissible limit as prescribed by WHO & ICMR.

TDS: The average TDS was to found vary from 0.987 to 1.32 gm/lit. The maximum permissible limit is 1.5 gm/lit as per WHO.

Hardness: The total Hardness of all water Sample are within limit (200 mg/lit, WHO).

Conductivity: Conductivity of water provides quick and convenient method for determination of total amount of ionisable salts present in it and expressed as milimhos/cm. In the present finding conductivity varied from 0.586 to 610mili mhos/cm.

Chloride: Presence of chloride in high amount in water indicated that it is contaminated by sewage. But in the present study quantity of chloride is moderate i.e. 106.9-113.9 mg/lit. The desirable limit of chlorides is 250 mg/L and permissible up to 600 mg/L.

DO: DO present in drinking water add test and it is highly fluctuating factor in water. According to European Economy Community, the permissible limit of drinking water for DO is 5mg/lit.DO of all water samples are found within permissible limit except Silk mill colony water sample, and all other parameters found in near to permissible limit.

SO_4: The variation in sulphate content represents the pollution status. The decrease in sulphate indicates detoriation and increase in sulphate indicate improvement of water quality. The highest desirable value of sulphate as prescribed by WHO is 200 mg/l. The present investigation shows that sulphate is under permissible limit.

RESULTS AND DISCUSSION

Results of Physico-chemical parameters of old Aurangabad city from Jan - 2013 to Dec -2013 is shown in **Table-1.**

Table-1: Average Values of Physico-chemical parameters

Parameters	S1	S2	S3	S4	S5	S6
Temp (^{0}C)	27	27.5	27.2	29.4	27.8	28
Ph	7.36	7.64	7.89	8.11	6.86	7.34
TDS (gm/lit)	1.121	1.233	1.099	1.322	1.091	0.987
Conductivity (milimhos/cm)	0.602	0.586	0.609	0.594	0.610	0.599
Sulphate (mg/lit)	68	110	108	98	176	139
Chloride mg/lit	106.9	108.2	112.3	113.9	108.7	103.9
DO mg/lit	4.6	4.5	5.2	4.9	4.7	4.9
COD mg/lit	17	19	18	21	23	19
Hardness (mg/lit)	113.0	98.7	120.1	112.9	108.3	114.2

Stations: *(S1: Begampura, S2: University Gate, S3: Silk mill colony, S4: Buddi lane, S5: Chawni, S6: Gulmandi.)*

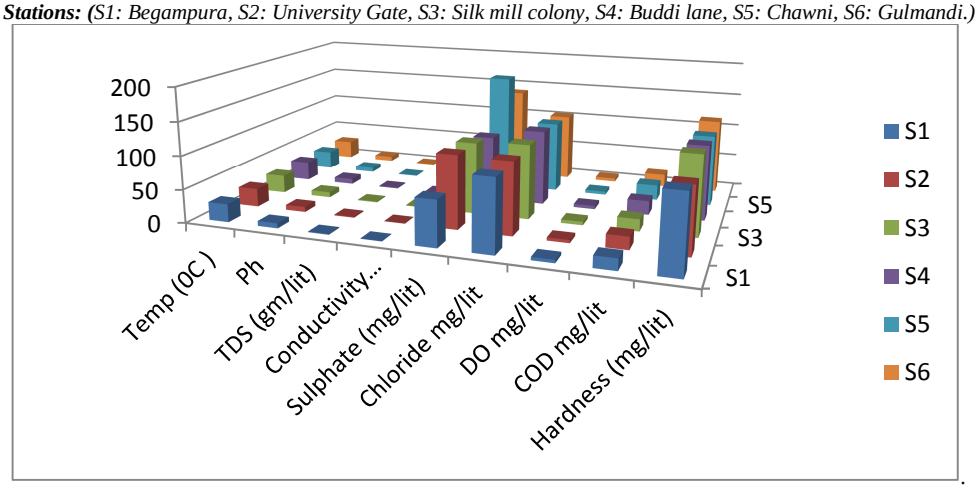

Fig.1: Comparative study of Physico-chemical parameters of different station at old Aurangabad city

CONCLUSION

Comparing present values of analysed selected various Physico-chemical parameters with the permissible limits prescribed by WHO & bureau of Indian Standards (IS 101500), it can be concluded that the ground water of selected site of Old Aurangabad city is suitable for drinking purpose.

REFERENCES

[1] Rai Megha, Shivaji Jadhav, Ayesha Durrani and Mazahar Farooqui, *JMCDD, ACTRA special issue*, **2015**, 119-124.
[2] Patel S.R., Desai K.K., *Asian J. Chem.*, ***2004,*** 16(2), 1171-1175.
[3] Rai Megha and Shrivastava R.M., *Current World Environment*, **2006,** 1(2), 213-216.
[4] Rai Megha and Somase Sai, *Nat. of Ext. Ed & interdisciplinary res*., **2013**, 1(I), 126-128.
[5] Biwas S.N., Hemlata Mohabey, M.L. Naik, *Asian. J. Chem.*, **2002**, 16(2), 865-871.
[6] Rathod S.D.,Mohsin M., Farooqui M.N., *Asian J. Biochem. And Pharm. Res.* **2011**, 2(1), 368-372.
[7] Patel S.,Mohsin M., Farooqui M.N and Quadri S.H., *Rasayan J. chem*, **2010**, 3(3), 420-423.
[8] Ubale M.B., Farooqui MN, Arif P.M., Zaheer A., Dhule D.G., *Orient. J. Chem.*, **2001**, 17(2), 347-8.
[9] Meitei N.S., Patil P.M., Bhosle A.B., *J. Aqua Biol.* **2004**, 19(1), 103-05.
[10] Sunkad B.N., Patil H.S., *Indian J. Ecol.*, **2003,** 30(1), 1106-9.
[11] ICMR, Manual of standards for quality of drinking water supplies **1975**.
[12] WHO: Guidelines for Drinking water quality 13 ed Geneva. **2003.**