



PHYSICO – CHEMICAL CHARACTERISTICS OF GROUND WATER AT AMALNER, MAHARASHTRA (INDIA): A CASE STUDY

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ABSTRACT

The present paper deals with the physico chemical characteristics of ground water of 10 different places in Amalner Dist-Jalgaon (M.S.) INDIA. Various physico chemical parameters such as pH, TDS, Hardness, Total Acidity, Total Alkalinity, Electrical Conductivity, Conc of Chloride ions were examined through the water analysis. The study was carried out during the year may 2012- june 2013. But here we mentioned only 30 samples of Pre-Monsoon, Monsoon and Post- Monsoon The results shows that the ground water from some sampling sites are within permissible limits according to WHO.

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INTRODUCTION

The water is one of the nature's free gift to the human race. It is an essential for survival of each soul. Most of the Indian Towns and Cities do not have access to safe drinking water. Naturally Ground water recharged through rain water. The composition of different kinds of micro nutrients and heavy metals like Zinc, Iron, Copper, Manganese, Lead, Nickel, Cadmium etc are changes which get affects on quality of Ground water. It is essential to monitor such type of pollution and major pollutants level. The main objectives of physico-chemical analysis of water are to determine the nutrient status of the medium, since the water contains dissolved and suspended constituents in varying proportion. The ten places from where the samples were collected are located in Amalner Tehsil of Jalgaon district M.S.

Experimental

Ten sampling sites were selected for collection of ground water samples from study area. Polythene bottles were used for the collection of water samples and brought in to the laboratory for the analysis. The control dynamic pH meter, Elico digital conductometer (CM180) were used for the determination of physico- chemical parameters physico-chemical analysis of water samples were carried out using standard methods given in literature¹.

RESULT AND DISCUSSION

The Table (1) shows the result of analysis of water. The average pH values ranges from 6.8-9.0.

The range of chloride ion all the water samples was found near to the range 269-1350 mg/litre; which is quite more than the permissible limit 250 mg/ litre. Excess chloride in the water increases the corrosion of the metal which can lead to increased the conc. of metals in the water.

Total hardness of the Ground water in the study area was high in sample no (6), (9), (14), (19), (20). It clearly indicates that the some of the effluents has affected the ground water. It has no adverse effect on human health, however some evidence has attribute about its role in heart diseases.

The TDS of ground water fluctuated in between 0.000275 – 0.0027 mg/lit. All the values are quite below than the permissible limits. High values of TDS in the drinking water are generally not harmful to the human being, but high conc. of these may affects to the person who are suffering from kidney and heart diseases.

Sample	Electrical conductance	pH	Cl-	TH	TDS	TAI	TA
1	0.50*10 ⁻³	8.14	319.5	180	0.00032	75	350
2	0.87*10 ⁻³	7.67	390.5	170	0.00055	50	200
3	0.49*10 ⁻³	8.38	269.8	450	0.00031	25	150
4	2.14*10 ⁻³	7.52	745.5	700	0.0013	75	450
5	3.87*10 ⁻³	7.17	1491	850	0.0024	100	750
6	2.73*10 ⁻³	7.59	887.5	900	0.0017	25	650
7	2.96*10 ⁻³	7.69	1164.4	800	0.0018	25	500
8	1.05*10 ⁻³	7.46	319.5	570	0.00067	25	650
9	3.36*10 ⁻³	7.32	958.5	1000	0.0021	50	950
10	2.39*10 ⁻³	7.34	781	700	0.0015	25	1000
11	0.29*10 ⁻³	7.28	217	600	0.0018	500	2250
12	0.8*10 ⁻³	7.7	287	650	0.0003	25	950

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13	0.48*10 ⁻³	7.22	426	490	0.0003	250	500
14	0.64*10 ⁻³	7.9	823.6	1000	0.0004	250	800
15	3.1*10 ⁻³	6.8	1349	630	0.0019	125	850
16	2.44*10 ⁻³	7.03	994	590	0.0015	200	1500
17	0.43*10 ⁻³	7.58	497	200	0.00027	375	1000
18	1.16*10 ⁻³	6.82	603.5	520	0.00074	275	1000
19	3*10 ⁻³	7.58	887.5	1100	0.0019	275	1050
20	2.8*10 ⁻³	7.11	859.1	1100	0.0017	300	1300
21	0.35*10 ⁻³	8.13	213	320	0.00022	25	500
22	0.72*10 ⁻³	7.92	440.2	150	0.00046	50	1100
23	0.45*10 ⁻³	8.32	312.2	420	0.00028	100	750
24	2.1*10 ⁻³	7.46	724.2	700	0.0013	75	1000
25	3.45*10 ⁻³	7.59	1420	850	0.0021	50	650
26	2.35*10 ⁻³	7.8	923	450	0.0014	25	750
27	0.48*10 ⁻³	8.4	468.6	180	0.0003	50	1000
28	0.64*10 ⁻³	7.6	355	500	0.0004	100	750
29	2.88*10 ⁻³	8	852	650	0.0017	50	1000
30	2.37*10 ⁻³	8.1	781	700	0.0015	25	850

CONCLUSION

In present Investigation an attempt was made to investigate the quality of water from those 10 different places in Amalner city of Jalgaon District in Maharashtra.

1. Some parameters tested under investigation are out of limit according to WHO
2. While most of the parameters like T.A, pH tested under investigation are within the permissible limit.
3. Sampling sites does not show pollution of ground water and suitable for irrigation as well as domestic purpose.

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