International Journal of Scientific Research in Chemistry (IJSRCH) | ISSN : 2456-8457
© 2017 IJSRCH | Volume 2, Issue 3

An Investigation and Evaluation of The Water Quality Parameters of The Akola District Region in The State of Maharashtra

S. J. Patil
Department of Chemistry, Dr Manorama and Prof. H.S. Pundkar Arts, Commerce and Science College Balapur Dist Akola (Maharashtra)
Correspondence: PatilSanjay59211@gmail.com

ABSTRACT

Several sampling locations surveying groundwater and surface water were located within a 30 km radius of the Akola district region between 16/10/2016 and 16/02/2017. The laboratory evaluated the physical and chemical characteristics of twenty water samples in addition to one another. The laboratory analyzed the levels of BOD, Hardness, Alkalinity, Chlorides, TDS, and DO through a variety of procedures. The findings were assessed in relation to the ISI Standard and the potable water quality criteria established by the World Health Organization (WHO). An analysis of the outcomes revealed that specific water samples fail to meet one or more of the criteria specified in the benchmarks for potable water quality. A considerable proportion of the samples demonstrated a substantial degree of Total Dissolved Solids (TDS) contamination. This study investigated the importance and practicality, as well as their ineffectiveness, of these indicators in forecasting the properties of surface water and groundwater quality.

Keywords : Drinking Water, BOD, DO, Physicochemical study.

I. INTRODUCTION

Water is an odorless, transparent, tasteless, and colorless inorganic chemical. There are numerous natural conditions of water. Precipitation manifests as rain, while aerosols manifest as smog. Dispersed particles of water constitute clouds. Water in its gaseous state exists as steam or water vapor. Regions vary in the purity of their water supplies. This is because chemical constituents and constituent concentrations vary from region to region. Water of compromised quality results from contamination. that is, it is unfit for human consumption. The introduction of foreign substances, such as microorganisms, chemicals, industrial waste, or effluent, results in a decline in quality[1-2].

River water serves a crucial function for human beings. It transports and incorporates industrial waste, festival refuse, and agricultural runoff. The water in that area is unfit for human consumption. Constant seasonal variation exists in water quality. Regular monitoring is crucial in order to control any spatial or transient variation [3].

II. EXPERIMENTAL

16/10/2016 to 16/02/2017 saw the collection of water samples. Every sample gathered from twenty sources in the Akola district area and placed in glass bottles in accordance with normal procedures. Water sample presentation and transportation to the lab followed established procedures. the bottles designated for use in household research on the stability of surface and

ground water for drinking. A mercury thermometer was used on the spot to measure the water's temperature. potentiometer used to monitor oxidation-reduction potential. A conductometer measures conductance. The pH meter measures the pH. We used A.R. grade samples and distilled water. Tables 1 and 2 below provide the parameters and methodology utilized to analyze the samples.

Different areas had varying degrees of hardness. The range was 195 to 587 ppm. The presence of bicarbonates, calcium carbonate, and magnesium carbonate is what gives hardness. Certain regions had significant concentrations of magnesium and calcium, which contributed to their high hardness. The concentration of calcium and magnesium rises with increases in the rate of evaporation and breakdown[4-5].

Total dissolved solids (TDS), often known as dissolved solids, refers to the many kinds of minerals that are dissolved in water. There were regional variations in the TDS range. The TDS ranged from 310 mg/L to 732 mg/L. In the event of contaminated water, this may also include organic materials and trash from industry. It influences the overall dissolved load as well. Different regions had varying percentages of chloride. High evaporation causes the sodium and chloride ions to cling to one another and crystallize as salt[6].

III. RESULTS AND DISCUSSION

The table displays the findings for the chemical and physical characteristics. Every sample had the same colour and odour. The range of pH values for the water samples was 7.4 to 7.9. The majority of the water samples had an alkaline composition. Water samples' D.O. concentrations ranged from 4.29 to 7.66 mg/L. The water samples' concentrations of calcium and magnesium range from 63 mg/L to 256 mg/L and 76 mg/L to 256 mg/L, respectively[7-8].

Table 1

Parameters	Method	Standard values (WHO 1993)	ISI 1991
Colour	colorimeter		-
Odour	By smelling		-
Temperature	Thermometer	100°C	-
pH	pH meter	7.5 to 8.5	6.5 to 8.5
D.O.	Winkler method	< 5.0 mg/L	< 5.0
Alkalinity	Titrimetric	-	-
Chlorides	Titrimetric	250 mg/L	250
TDS	-	500 mg/L	500
Total hardness (as $CaCO_3$)	Titrimetric	100 mg/L	300
Total magnesium	Titrimetric	150 mg/L	30
Total Calcium	Titrimetric	100 mg/L	75 mg/L
BOD	Titrimetric	Not more than 8 mg	-
COD	Titrimetric	Not more than 250 mg/L	-
ORP	Potentiometer	-	-

Table 2

Sr.No	Location	pH	Conductance(ʊ)	ORP (mv)	TDS (mg/L)	DO (mg/L)	Chlorides (mg/L)	TH (ppm)	Mg (mg/L)	Ca (mg/L)	BOD (mg/L)	COD (mg/L)
1	Umari	7.6	578.6	49.2	637	5.31	240.6	587	164	203	2.09	17.2
2	Adsul	7.92	732	52.7	500	4.29	241.9	492	256	256	2.06	18.5
3	Panchgavhan	7.4	618	44.8	512	5.31	225.1	566	144	224	2.11	17.1
4	Khandala	7.82	483.5	54.8	575	4.48	209.3	530	116	184	2.10	17
5	Gordha	7.79	464.7	51.5	575	5.58	185.6	336	120	216	2.11	16.6
6	Deori	7.8	704.2	60.5	612.5	5.58	149.1	456	176	198	2.19	20
7	Mundgaon	7.9	687.2	55.5	610	5.66	231	478	196	89	2.06	21.1
8	GajananNursary	7.91	731.5	65.9	537	5.44	243	446	196	88	2.16	20.8
9	Pote Vidyalaya	7.7	684	54.2	543	5.6	41.7	239	172	111	2.16	18
10	Mahindra Akot	7.51	456	53.5	522	5.88	90.6	306	135	112	2.32	18
11	Bodkha	7.31	488	48	387	6.68	28.7	271	144	98	2.60	20.3
12	Chinchkhed	7.41	377	50.5	412	6.8	21.59	276	104	118	2.11	20.2
13	Patur	7.26	432.5	54.7	466	7.37	26.2	437	228	157	2.08	19.4
14	Shirla	7.51	310	57.7	437.5	7.66	30.4	304	112	128	2.09	20.0
15	Dagad Parva	7.8	470	49	501	7.07	26.1	195	144	168	2.11	24.1
16	Guesthouse	7.6	529.6	49	498	6.51	20.5	242	148	118	1.99	24.6
17	Waghagad	7.6	563	52.7	262	6.73	21.5	501	226	63	2.06	20.4
18	Punoti	7.4	440.7	49	462	6.63	25.1	364	124	154	2.10	18.6
19	Astool	7.55	442.7	64.5	389	6.66	34.3	425	76	146	1.98	24.6
20	Pastool	7.37	433.2	58.5	467	6.89	32.2	377	76	69	1.87	24.8

IV. CONCLUSION

The different parameters under investigation lead to the conclusion that there are high TDS levels in some areas. The Akot Tahsil groundwater is hard. Hardness from magnesium and calcium contamination exists in it. Digestive problems may result from a high TDS value. These two sources of water are fit for human consumption.

V. ACKNOWLEDGEMENT

Authors are thankful to Principal of Shri Shivaji College, Akot for encouragement and providing necessary facilities

VI. REFERENCES

[1]. Jayant chitia, Mrudal Buragohain & Siba Prasad sharma Chem. Sci. 7(2) 1143-1152 (2009)

[2]. Gangotri V.M. and Mudkhede L.M. (2009), Physico chemical characteristics of ZGround water in the vicinity of the sugar industries in ahmednagar distric,Maharashtra, J. Aqua. Boil, 24(1); 95-98
[3]. Kulkarni P.R. (1990) Technological mission and drinking water quality in India in 22 annual convention WWA 28-35
[4]. NEERI (1986) manual on water and waste water ananlysis Nagpur
[5]. Rajdeep Kumar and R.V.Singh int J chem, sci 7(4) 2534(2009)
[6]. D.P.Gupta, Sunita and J.P.Seharal reasercher,1(2) (2009)
[7]. Ravikumar Gangwar, J.Chem.Pharamaceut. Res.,4(9), 4231-4234(2012).
[8]. Rajdeep Kumar and R. V. Singh,int.j.Chem.Sci., 7(4),2534 (2009)

Suggested Citation :

S. J. Patil, "An Investigation and Evaluation of The Water Quality Parameters of The Akola District Region in The State of Maharashtra", International Journal of Scientific Research in Chemistry (IJSRCH), ISSN : 2456-8457, Volume 2 Issue 3, pp. 57-60, 2017.
URL : https://ijsrch.com/IJSRCH175442