

Investigations and Evaluation of The Water Quality Characteristics in The Akola District Region (Maharashtra)

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ABSTRACT

We examined samples of groundwater and surface water from different locations within 30 km of Akola district from March 16, 2019, to July 16, 2019. Scientists looked at twenty samples of water in the lab to find out about their chemical and physical features. The lab did tests to look at things like pH, EC, ORP, BOD, Hardness, Alkalinity, Chlorides, TDS, DO, and more. All the results were checked against the Drinking Water Quality Standard set by the WHO (World Health Organization) and the ISI Standard. Although the results were similar, some samples of water did not meet one or more of the above drinking water quality guidelines. Multiple samples were very polluted for TDS. People talked about how important and useful these factors are for figuring out the quality of groundwater and surface water.

Keywords : Drinking Water, BOD, DO, TDS, Physicochemical Study.

I. INTRODUCTION

Water is an inorganic liquid that is clear, tasteless, colorless, and odorless. Water can be in a number of natural states. As a result, it pours down rain and creates fog with aerosols. Droplets of water in the air make up clouds. Water becomes steam or water vapor when it turns into a gas. In different places, the water quality is not the same. This is because the chemical parts and concentrations of those parts vary from place to place. The quality of water goes down when it is polluted. That is, it is not safe for people to drink. Foreign substances like microorganisms, chemicals, industrial waste, or sewage lower the quality.

The water in rivers is very important to people. It collects and moves industrial garbage, festival waste, and water that runs off of farms. The water in that

area is not safe for people to drink. The changes in water quality that happen with the seasons always happen. Monitoring changes on a daily basis is necessary to keep them under control, whether they are spatial or temporary.

EXPERIMENTAL

We examined water samples from March 16, 2019, to July 16, 2019. All samples were taken from twenty different places in the Akola district area and put in glass bottles according to the standard. It was normal practice to present and transport water samples to the lab in the right way. It was written on the bottles that the study was about how stable groundwater and public water are for drinking and other home uses. We used a mercury thermometer to find out how hot the water was at the spot. The resistor measures the

oxidation-reduction potential. A conductometer measures the conductance. A pH meter measures pH. They used distilled water and A.R. grade samples. In Tables 1 and 2, you can see the parameters and methods used to review the examples[1-2].

Different areas had different levels of hardness. Between 138 and 493.3 ppm. Magnesium carbonate, calcium carbonate, and bicarbonates are what make rocks hard. They had a high quantity of calcium and magnesium, which made the rocks in some places very hard. The content of magnesium and calcium goes up as the rate of decomposition and evaporation goes up.

When you add up all the dissolved solids (TDS), you get a measure of the different minerals that are in the water. The range of TDS was different in different places. TDS levels ranged from 500 mg/L to 683 mg/L. In the case of polluted water, this could also include

organic matter and garbage from factories. It changes the total dissolved load too. In different areas, the amount of chlorine was different. When there is a lot of drainage, the chloride and sodium ions stick together and make salt crystals[3-5].

RESULTS AND DISCUSSION

The table shows the outcomes of the physical and chemistry tests. All of the samples had no smell and no color. Between 7.3 and 7.99 was the pH range for the water samples. Most of the samples of water were alkaline. The amount of D.O. in the water samples ranged from 5.1 mg/L to 7.65 mg/L. There are between 74.6 mg/L and 245 mg/L of magnesium and between 54 mg/L and 250.6 mg/L of calcium in the water samples[6-9].

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(µ)	OR P (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	700.1	50.6	583	5.93	413	485.3	160	225.3	2.16	16.8
2	Adsul	7.86	712	56.3	500	5.1	449	493.3	144	250.6	1.81	16.6
3	Panchgavhan	7.63	699	45.6	550	5.23	431	317.3	177.3	149.3	1.98	18.2
4	Khandala	7.96	564	54.6	566	6.03	209.3	493.3	95	197.3	1.80	18
5	Gordha	7.99	466	53	483	5.88	192.3	336	112	224	2.06	18.6
6	Deori	7.99	641	60.1	550	5.76	218.2	464	149.3	114.6	2.00	20.0
7	Mundgaon	7.3	666	59	716	5.37	554	386	133.3	113.3	2.00	21.8
8	GajananNursary	7.6	686	65	550	6.09	511	249.3	148	89.3	2.68	22.1
9	Pote Vidyalaya	7.81	600	66	595	6.02	171	234.6	147	101.3	1.89	20
10	Mahindra Akot	7.66	694	59	589	5.96	188	341	245.1	156	2.16	21.5
11	Bodkha	7.8	396	47.8	550	6.01	57	298	138.6	160	2.63	22.18
12	Chinchkhed	7.7	564	50.2	595	6.23	86.4	265	101.3	162.6	2.93	23
13	Patur	7.71	561	50.6	583.5	6.32	61.4	264.6	157.3	141.3	2.91	23
14	Shirla	7.91	599	54.3	666.1	6.29	99.4	266.6	101.3	132	3.01	19.7
15	Dagad Parva	7.84	566	47	595.4	6.76	41.2	282	112	121.1	3.22	23.8
16	Guesthouse	7.88	611	50.6	611	7.01	33	282.1	144	66	3.14	26.1
17	Waghagad	7.86	545	47.3	550	6.12	29.7	278	112	156	2.94	22
18	Punoti	7.95	619	48.6	600	6.12	55	288	112	176	3.54	22
19	Astool	7.88	639	56	583.5	7.65	49.6	144	74.6	69.3	2.12	27.1
20	Pastool	7.98	669	53.6	683.3	7.12	66.6	138	74.6	54	3.22	24.1

II. CONCLUSION

It has been determined, based on the many characteristics that were investigated, that the total dissolved solids (TDS) in certain regions is high. The presence of a high TDS value may result in gastrointestinal side effects. Additionally, both of the water samples are suitable for consumption by humans.

III. ACKNOWLEDGEMENT

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IV. REFERENCES

- [1]. APHA. AWWA, WPCE. (1992) Standard methods for the examination of water and waste water (17th edition) Washington
- [2]. APHA. (1989), American public health association. Standard methods for the examination of water and waste water., 17th Ed, Washington. DC.
- [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 analysis 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 researcher, 1(2) (2009)
- [7]. Jayant Chitambar, Mrudal Buragohain & Siba Prasad sharma Chem. Sci. 7(2) 1143-1152 (2009)
- [8]. Rajdeep Kumar and R. V. Singh, Int. J. Chem. Sci., 7(4), 2534 (2009)
- [9]. Ravikumar Ganjwar, J chem, Pharmacute Res 4 (9), 4231-4234(2012)

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