

Correlation Coefficient: Physicochemical Aspect of Well Water Anadur Village from Osmanabad, MS India

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ABSTRACT:

The Physicochemical analysis of the effluents (waste) of the Anadur well water sample has been carried out in the present investigation as per the methods recommended by APHA, WHO, ICMR. Present sample is highly contaminated by the presence of organic and inorganic salt above the permissible limit suggested by the International Standards. It shows a large deviation from the view of the correlation coefficient.

Key words:

Naldurg well water sample, pH meter, Conductometer, Titration method and Gravimetric method and Correlation Coefficient.

I. INTRODUCTION:

The water is being polluted and thus human life is adversely affected. The high levels of pollution are mainly due to 1)

Modernization, 11) urbanization 111) Industrialization and IV) Overcrowding. So water is being highly polluted. Yet no physicochemical studies are reported from this present region water sample, therefore, this sample is selected for analysis, in order to use for irrigation and may be to a certain extent for drinking purposes also.

II. METHOD AND MATERIALS:

The sample Selected physicochemical analysis belongs to Groundwater pollution, consequently irrigation purposes and harmful to the health of Human being as well. pH and conductance value of the sample is determined with the help of a pH-meter and conductometer, while alkalinity, hardness, sulfates, chlorides, calcium, COD, and Carbon Dioxide are analyzed by means of Titration methods, while TDS is calculated by the Gravimetric method.

Observation Table: 1

Sr. No	Parameter (Mg/L)	Winter 2020	Summer 2020	Rainy 2020	Winter 2021	Summer 2021	Rainy 2021
1	pH	7.40	7.54	7.39	7.36	7.57	9.70
2	Conductance	0.68	0.73	0.76	0.73	0.78	0.89
3	Carbon Dioxide	10.60	10.30	9.50	10.45	10.35	9.98
4	Total Dissolved Solids	390	400	416	399	407	451
5	Alkalinity	265	278	295	264	270	289
6	Hardness	190	265	290	187	195	178
7	Sulphates	29	20	19	31	27	26
8	Chlorides	80	89	85	84	80	69
9	COD	47	51	35	46	52	38

Values of Correlation Coefficient of Anadur Well Water Sample:

Observation Table -2

Sr. No	X- (Parameter)	Y- (Parameter)	P- value	Covariance	Statistic	Correlation Coefficient Value (r)
1	pH	Hardness	0.4246	45.364	0.8882	0.4059
2	pH	Hardness				
3	pH	Hardness				
4	pH	Hardness				
5	pH	Hardness				
6	pH	Hardness				

Observation Table -3

Sr. No	X- (Parameter)	Y- (Parameter)	P- value	Covariance	Statistic	Correlation Coefficient Value (r)
1	TDS	Hardness	0.2508	- 2103.2667	- 1.3418	- 0.5571
2	TDS	Hardness				
3	TDS	Hardness				
4	TDS	Hardness				
5	TDS	Hardness				
6	TDS	Hardness				

III. RESULT AND DISCUSSION:-

From this, it is found that the Andur well water sample is found belongs to Excellent Class-II throughout the considered season. (Table no.1,2,&3) The sample shows the minimum quantity of TDS 390 mg/L and a maximum of 451 mg/L. IS-10500 suggests the permissible limit of alkalinity for drinking purposes up to 200 mg/L, while USPH standards are 250 mg/L. This sample is found to show a minimum 264 mg/L and a maximum 289 mg/L. This shows that this sample is giving little respect to USPH. The observed quantity of Chloride is found within the range 69-89 mg/L, while USPH suggests IS-10500 as well as a permissible limit for chlorides up to 250 mg/L for drinking purposes. This shows that the quantity of chloride found is very less as compared to the given standards. The recorded value of Sulphates is found within the range 19-31 mg/L., while IS-10500 is suggesting the standard limit of Sulphates for drinking purposes 150 mg/L, while USPH and WHO are suggesting the standard limits of Sulphates for drinking purposes are 250 mg/L. This shows that the quantity of sulfate found is very less as compared to the given standards. IS 10500 suggests the permissible limit for hardness mg/While WHO relaxes the permissible limit upto 500mg/L, but the recorded values are in between 178 to 290 mg/L. This shows that the quantity of hardness compared to given standards is in the desired range.

This shows that they are giving slight respect to IS-10500, but fails to respect the WHO. The recorded quantity of COD is ranging from 35 mg/L to 52 mg/L. The quantity of Conductance is found within 0.68 mmoh/cm to 0.89 mmoh/cm. The value of pH is ranging from 7.36 to 9.70. World Health Organization (WHO) suggests the permissible limit for drinking quality within 6.5-8.5. IS-10500 also suggests permissible limit of pH for drinking purpose within (6.5-8.5). This shows that this sample respects to above said recorded value of Carbon Dioxide is ranging within 9.50 ml/L to 10.60 ml/L.

IV. CONCLUSION:

On the basis of above discussion, it can be concluded that in average all the parameter showing the remarkable positive and negative deviation from suggested standard limits (WHO & IS-OS00). Hence this water sample is found not suitable for drinking purpose. With respect to the values of pH and Hardness, result of Pearson correlation indicated that there is a non-significant medium positive relationship between X and Y. With respect to the values of TDS and Hardness, the result of Pearson correlation indicates that there is non-significant very small negative relationship between X and Y

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