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Study on Quality of Underground Water in Titwi Village, Ghatanji Tahsil, Yavatmal District (Maharashtra)

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Abstract:

To analyze the underground water quality in Titwi Village and to study the contents present. water are essential factors for living and for the good yield of the crop. The underground water quality depends on various constituents and concentration. The physico-chemical parameters such as pH, electrical conductivity (EC), chloride, Dissolved Oxygen, Total hardness and total dissolved solids (TDS) were analyzed to check the quality of Underground water.

Keywords: *borewell water samples, underground water, Titwi village, water quality parameters.*

Introduction:

Water a substance composed of the chemical elements hydrogen and oxygen and existing in gaseous, liquid and solid states. it is one of the most plentiful and essential need for the human and other living organisms. it has the important ability to dissolve many other substances. The quality of underground water depends on various chemical constituents and their concentration, which is derived from the geological data of the particular region.

Most underground water is clean, transparent, odourless. but underground water can become polluted due to various anthropogenic activities. Water bodies can be polluted by a wide variety of substances, including pathogenic microorganisms, putrescible organic waste, plant nutrients, toxic chemicals, sediments, heat, petroleum (oil), and radioactive substances. when people apply too much fertilizer, herbicides or pesticides on their fields or lawns.

Underground quality of water is an important factor in development and use of underground water as drinking and agricultural purposes in this region. The potable water should be free from

pathogenic agents and chemical constituents, pleasant to taste and usable for domestic purposes and healthy to human.

Material and method:

Study Area: Titwi is a village in Ghatanji Tahsil in Yavatmal District of Maharashtra State, India, Yavatmal district is lies in the Vidarbha region of the state and is popularly known as the 'Cotton City'. Jowar and cotton are the main crops cultivated in our region. and the climate of the region is suitable for these crops. The sources of the irrigation are well, borewell and canal.

Methodology: Samples of drinking water from all selected areas were collected in high density polythene bottles. The total 10 water samples collected from all these areas. The level of water in these area is about 80 to 160 m in depth. All the collected water samples were analyzed for various water quality parameters like pH, Chlorides, Hardness, Electrical conductivity, dissolved oxygen and TDS were determined by water and soil analysis kit model 1022-G. Total hardness was determined by complexometric method and The chloride was byargentometric titration method.

Result and Discussion: The results are as follows.

Table 1: physio-chemical parameter in drinking water.

Sample No	pH	Electrical Conductivity (µm MHOS)	Chloride	Total Hardness	DO	TDS
1	8.1	1.5	185	760	7.5	155
2	7.7	1.6	175	600	8.9	130
3	6.9	0.9	145	570	6.8	188
4	6.5	O. 7	190	670	8.0	165
5	9.5	1.2	90	930	9.3	225
6	8.2	1.8	100	690	9.7	244
7	7.8	1.3	185	695	6.9	172
8	8.2	0.8	195	580	8.0	210
9	7.6	1.9	135	390	9.1	136
10	7.9	0.8	200	470	9.4	128

pH: pH values ranged between 6.5 to 9.5. The water sample S4 has lowest pH value and water sample S5 has high pH value.

Electrical conductivity: The Electrical conductivity in the water sample ranged between 0.7 to 1.9. The sample S4 has lowest electical conductivity and Sample S9 has highest electrical conductivity.

Chloride: The value of chloride range between 90ppm to 200ppm. The sample S5 has lowest value and the sample S10 has highest value.

Total hardness: The results of hardness range between 390 to 930

Dissolved oxygen: The value of Dissolved oxygen ranges between 6.8 to 9.7. Dissolved oxygen is most important parameters.

TDS: Total dissolve solids results are ranges between 128 to 244. The water is safe to use for all the purposes.

Conclusion:

Underground water quality of Titwi village has been analyzed in this work. In this analysis, it is observed that the underground water samples shows some parameters in prescribed limit and some are above the normal level. Drinking water is a basic need. Hence people should consume pure water containing mineral elements within the proper configuration.. If not, they will be affected by polluted water & water born diseases. If treated properly the water found here can be use for drinking..

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