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Analysis of ground water for Akola City

Prof.P.M.Raut[1], Prof.A.T.Tathod[2]
M.E.Civil (Env.Engg) ,C.O.E.&T Akola[1]
M.E.Civil (Env.Engg) ,C.O.E.&T Akola[2]

Abstract
Water is an indispensable natural resource on earth. Safe drinking water is the primary need of every human being. It is necessary to analyze various parameters at various locations using standard prescribed by World Health Organization. This will ensure safe water supply to the users. Because due to use of contaminated drinking water, human population suffers from varied of water borne diseases. The detail of water collection location and sampling methods has been given. Data has been collected for analysis of various parameters of groundwater. Before testing, the samples are collected from the source of water. These samples are collected from such place that they represent the body of water from which they are collected.
Key Words: Safe Drinking Water, WHO Standards.

I.   Introduction

Fresh water has become a scarce commodity due to over exploitation and pollution of water. Groundwater is the major source of drinking water in both urban and rural areas. Groundwater is the most important source of water supply for drinking, irrigation and industrial purposes. Increasing population and its necessities have lead to the deterioration of surface and sub surface water. Having safe drinking water and basic sanitation is a human need and right for everyman, woman and child. People need clean water and sanitation to maintain their health and dignity. Having better water and sanitation is essential in breaking the cycle of poverty since it improves people's health, strength to work, and ability go to school. Yet884 million people around the world live without improved drinking water and 2.5 billion people still lack access to improved sanitation, including 1.2 billion W.H.O. do not have a simple latrine at all. The World Health Organization (W.H.O.) estimates that 88% of diarrheal disease is caused by unsafe water, inadequate sanitation and poor hygiene. As a result, more than4,500 children die every day from diarrhea and other diseases. For every child that dies, countless others, including older children and adults, suffer from poor health and missed opportunities for work and education. Water is one of the most important and abundant compounds of the ecosystem. All living organisms on the earth need water for their survival and growth. As of now only earth is the planet having about 70 % of water. But due to increased human population, industrialization, use of fertilizers in the agriculture and man-made activity it is highly polluted with different harmful contaminants.

II.   Water analysis

The analysis of water of the source is done to determine the various impurities presenting it. On the basis of these impurities the treatment plant will be designed. Therefore, the analysis of water is very necessary before designing any water supply scheme. Similarly after the treatment of water, its analysis is again done to ascertain that water has been purified or not. Treated water before supply to the public is checked for its quality whether it fulfills the requirements of the standard laid down by the public health department.

III.   Standard of water quality:

The following are the standard of water to be used for the domestic purpose:

Sr. No	Particular	Acceptable limits
I	Physical Standards	
1	Temperature	10°C to 15.6°C
2	Odour	0 to 4 p. Value
3	Colour	10 to 20(platinum cobaltscale)
4	Turbidity	5 to 10 p.p.m. (silica scale)
5	Taste	No objectionable taste
II	Chemical Standards	
1	Total solids	Up to 100 p.p.m.

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2	Hardness	75 p.p.m. 115 p.p.m.(hardness expressed as CaCO3 equivalent)
3	Chlorides	Up to 2560 p.p.m.
4	Iron and manganese	Up to 0.3 p.p.m.
5	pH value	6.5 to 8
6	Lead	0.1 p.p.m.
7	Arsenic	0.05 p.p.m.
6	Sulphate	Up to 250p.p.m.
9	Carbonate alkalinity	Up to 120 p.p.m.
10	Dissolve oxygen	5 to 6 p.p.m.
III	Biological Standards	
	B-coli-No B-coli in 100 ml	

IV. Results

1) The observation and analysis shows that the pH of the sample varies between 6.45 to 8.19 at various location of sample
2) The observation and analysis shows that the chloride of the sample varies between 134 ppm to 349 ppm at various location of sample
3) The observation and analysis shows that the hardness of the sample varies between 308 ppm to 728 ppm at various location of sample
4) The observation and analysis shows that the turbidity of the sample varies between 5 NTU to 13.3NTU at various location of sample
5) The observation and analysis shows that the dissolved oxygen of the sample varies between 4.9 ppm to 7.8 ppm at various location of sample
6) The observation and analysis shows that the sulphate of the sample varies between 240 ppm to 370 ppm at various location of sample
7) The observation and analysis shows that the calciumof the sample varies between 77 ppm to 190 ppm at various location of sample
8) The observation and analysis shows that the sodium Hydroxide (NaoH) of the sample varies between 215 ppm to 445 ppm at various location of sample
9) The observation and analysis shows that the sodium bicarbonate **(Na2CO3)**of the sample varies between 127 ppm to 410 ppm at various location of sample
10) The observation and analysis shows that the total dissolved solid of the sample varies between 660 ppm to 810 ppm at various location of sample

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