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ANALYSIS OF GROUND WATER AND COMPARE IT WITH WORLD HEALTH ORGANIZATION (WHO) FOR AKOLA CITY.

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Abstract: Water being prime important resource, it becomes must to reserve and analyze it so as to secure human health and environment. As, the quality of water is affected due to various region like geography , soil type , vicinity of industrial area , weather or climatically condition etc. it is essential to keep on analyzing the quality of water as per standard and norms. The study in this paper is related to the analysis of ground water and comparison of it with WHO organization needs and norms for safeguard of health. The study is done for Akola city which belongs to tropical regions having hot and dried climatically conditions and high scarcity of water availability in mid of summers. Sample is collected for various locations and parameters are checked related to it for making out probable comments.

Keywords- WHO, Ground Water



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INTRODUCTION

Water is an indispensable natural resource on earth. Safe drinking water is the primary need of every human being. 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 every man, 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. Yet 884 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 than 4,500 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. Therefore it is necessary that the quality of drinking water should be checked at regular time interval, because due to use of contaminated drinking water, human population suffers from varied of water borne diseases.

In this chapter detail of water collection location and sampling methods has been given.

Data has been collected for analysis of various parameters of groundwater. It is necessary to analyze various parameters at various locations using standard prescribed by World Health Organization. Before testing, the samples are collected from the source of water. These samples should be collected from such place that they represent the body of water from which they are collected.

Water analysis

The analysis of water of the source is done to determine the various impurities present in 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 fulfils the requirements of the standard laid down by the public health department.

The following are the test which are done during water analysis

1. Physical test

- a. Temperature
- b. Colour
- c. Turbidity
- d. Tastes & odours
- e. Specific conductivity

2. Chemical test

- a. Total solids
- b. Hardness
- c. Chlorides
- d. Chlorine
- e. Iron & manganese
- f. pH value
- g. lead & arsenic
- h. dissolved gases
- i. nitrogen

j. metals & other chemical substances

3. Biological test

a. Total, count of bacteria

b. Bacteria coli(B-coli) test

Standard of water quality:

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

Physical Standards

Temperature 10°C to 15.6°C

Odour 0 to 4 p. Value

Colour 10 to 20(platinum cobaltscale)

Turbidity 5 to 10 p.p.m. (silica scale)

Taste No objectionable taste

Chemical Standards

Total solids Up to 100 p.p.m.

Hardness 75 p.p.m. 115 p.p.m.(hardness expressed as CaCO₃ equivalent)

Chlorides Up to 2560 p.p.m.

Iron and manganese Up to 0.3 p.p.m.

pH value 6.5 to 8

Lead 0.1 p.p.m.

Arsenic 0.05 p.p.m.

Sulphate Up to 250p.p.m.

Carbonate alkalinity Up to 120 p.p.m.

Dissolve oxygen 5 to 6 p.p.m.

Biological Standards

B-coli-No B-coli in 100 ml

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 calcium of 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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