



Comparative study of ground and well water quality in Latur Dist. Latur [M.S.]India

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Abstract :- Freshwater is the essential requirement for surviving any organism on the earth. Water is present as a supporter of life on the earth without water one can not imagine life on this planet. The water is present in different forms on the earth. Main source of water on the earth is the ocean and precipitation due to which the rain is there. The water in wells and in tube wells are the main sources of drinking water here. These are considered for comparative study in their present work which was carried in between Jan to Dec 2017. Different parameters were checked for this work as Temperature to Alkalinity. The present work is a small step to check the quality of water in Latur

Keywords: Comparative study, water parameters, Monthly variations, Tube well and Wells

1] Introduction :

Water covers about 71% of the Earth's surface out of which of 2.7 of the total is fresh water, of which 1% is ice free water in the rivers, lakes and atmosphere as biological water . It has been estimated that only 0.00192% of the total water on earth is available for human consumption. (Trivedy, R.K., 1988) Water is a universal solvent and is a major constituent of all living organisms.

Water is distributed in nature as surface and ground water in different forms like rain

water, river water, spring water etc. The rain water constitutes to one of the most important and largest sources of water. Water pollution is due to the alternation in physical, chemical and biological characteristic which may lead to harmful effect on human being and other organisms.

Ground water is the most abundant and readily available source of fresh water , followed by lakes, reservoirs, rivers and wetlands ; groundwater represents over 90% of the World's readily available freshwater resources (Boswinkel, 2000) About 1.5 billion people depend upon groundwater for drinking purpose.

Keeping in mind this view the present work was undertaken for knowing the ground water quality and its portability by comparing with the WHO and ISI Permissible Standards.

2] MATERIALS AND METHODS

The present study was conducted for knowing the ground water quality of Latur [Geographical location 18.43° N and 76.73° S for this samples were collected from different areas of Latur City from 2 wells and 2 bore wells in four directions . The different physico-chemical parameters were determined by APHA(1992), IAAB (1998). For results and discussions the sum mean values are taken. The work is conducted in 2017 The samples were collected betⁿ 9.00 am to 12.00 pm. The four sampling stations were selected in different directions of Latur two bore well and two well are as at which three times the sampling was applied in January 2017 to Dec.2017

1] Two well Sampling stations are as

East region :- Well Station A

West region :- Well Station B

2] Two Borewell Sampling stations are as

East region :- Bore Well Station A

West region :- Bore Well Station B

The parameters like temperature, pH were noted at the stations, Do was fixed at the stations with the reagents and estimated at the laboratory.

3] Result and Discussion

1] **Temperature:** - is an important parameter which helps in governing different physical, chemical and biological properties of an aquatic environment. In the present study the Atmospheric as well as water temperature were recorded at 4 different stations in Latur 2 well and 2 borewell.

1] **pH:** - pH is the negative logarithm of the hydrogen ion concentration. pH change is accompanied by changes in the physico-chemical aspects of the aquatic medium. pH is also an important parameter for determining the acid-base balance of river water. An adverse concentration of hydrogen ion is difficult to treat by biological means. pH range between 7 to 8 has been indicated good for fish culture (Jhingran, 1977). In the present study, pH ranges between 7 to 8.

Comparatively less value of pH was recorded at 2 wells in Latur and Maximum value was also recorded at 2 borewells in Latur

3] **Dissolved Oxygen :-** Dissolved oxygen (DO) is not only an important for indicator of pollution (NEERI, 1988) but it also indicates the physical, chemical and biological activities of water body. In the present study the values of DO ranged between 2.6 to 10 mg/l The values of do are below the permissible limits given by WHO and ISI at four stations in Latur so it can be concluded that less values were recorded in borewell samples than well water samples. The minimum value 2.6 was recorded in bore well sample and maximum value 10 mg/l was recorded in well water.

The DO values were is below the permissible limit in bore well as well as in well water. Generally the high values are recorded in Winter and low values are recorded in summer same type results were recorded by Kumar (1993)

4] **Chlorides:-** Increasing concentration of chloride in fresh water bodies acts as an indicator of pollution (Dhanapakiyam *et al.*). The mean values of chlorides are found to be in betⁿ 600 mg/lit to 886.2 mg/lit in the ground water and well water samples. The high values of chlorides were recorded from Latur bore well samples with mean value 742.66 mg/l as compared to well water samples with mean value 705.3 mg/l. The high values of chlorides are due to pollution of ground water as well as well water samples from chloride rich effluent. Karnath (1989) also recorded same results. Venkata Mohan *etal* (1995). In the present chloride values were above the permissible limits of WHO and ISI.

5] **Salinity:** - The mean values of salinity are recorded in betⁿ 1122.9 mg/l to 1599.7 mg/l. The high values of salinity were recorded from latur bore well samples with mean value 1377.16 mg/l as compared to well water samples with mean value 246.33 mg/l.

The high values of salinity levels can make water unfit to use for any purpose and even low levels can create health problems for individuals who may suffer from high blood pressure. The high values of salinity are recorded at latur bore well and well water is notable as these are above the permissible limit of WHO and ISI. High salinity values were also recorded by Prakash (1996) Vijaykumar *et.al* (1996).

6] **Total hardness :-** The mean values of hardness recorded in betⁿ 460 mg/l to 1116 mg/l. The high values of hardness were recorded from latur bore well samples with mean value 744 mg/l as compared to well water samples with mean value 578.33 mg/l. Total hardness calcium and magnesium above limits causes encrustation in water supply structure and adverse effect on domestic use. (Ramteke *etal* 1988) Dhamij *etal* (1995), Nagraj *etal* (2005).

High values of hardness or hardness is commonly defined as the sum of the Polyvalent cat ions dissolved in water. The most common cations are calcium and magnesium; although iron and manganese may contribute.

The values of hardness at bore and well water are above the permissible limits given by WHO and ISI.

7] Chemical Oxygen Demand Chemical oxygen demand (COD):-

is the Capacity of water to consume oxygen during the decomposition of organic matter. COD helps to indicate the pollution status of water body (WQM, 1999). In study period the maximum values ranged between 32 to 97.6 mg/l. The high values of COD were recorded from latur bore well samples with mean value 47 mg/l as compared to well water samples with mean value 46 mg/l. The values of COD were below the permissible limits given by WHO and ISI.

8] Total Dissolved Solids [T.D.S]:- Total solids ranged from 11 to 88 mg/l. The high values of TDS were recorded from latur well water samples with mean value 40.4 mg/l as compared to well water samples with mean value 28.8 mg/l. The TDS values were below the Permissible limits given by WHO and ISI.

9] Alkalinity :- The alkalinity values provide guidance in applying proper doses of chemicals in water and wastewater treatment process. High alkalinity values are indicative of the eutrophic nature of the water body. In study period the Maximum values ranged between 24 to 60 mg/l. The high values of alkalinity were recorded from latur well water samples with mean value 46 mg/l as compared to bore well water samples with mean value 36 mg/l.

Conclusion:-

The ground water samples Bore 1 and Well water samples from Latur were analyzed to find out the effect of industrial effluent, other Pollution load or domestic activities on ground water quality. It is found that ground water is contaminated due to effluent percolation. Chloride, salinity and total hardness in this region are well above Indian standard specification for drinking given by WHO and ISI. It may be due to addition of industrial effluent and other Pollution load on the ground water. So it is the duty of every citizen to take the care of our ecosystem and should avoid the pollution which is dangerous for everyone.

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