



Study of Water analysis from some selected Bore wells in Beed city(MS)

V. V. Naiknaware, Syed Abed^a, MazaharFarooqui^b,
Dept. Of Chemistry
Swa.Sawarkar College,Beed.

^aGovernment College of Arts, Science, Aurangabad.

^bRafiqZakariya college for women, Aurangabad.

Abstract: - Water plays vital role for regulation and growth of organisms. Potable water is safe enough to be consumed by human, plants and animals. Water samples collected from six bore wells were subjected to physico-chemical and biological analysis. Physico-chemical analysis carried using titrimetric spectrophotometric method to evaluate the quality. The results showed that P^H temperature, turbidity, chloride, nitrate, and total hardness of all the bore well water samples were the permissible limits while phosphate and magnesium, samples gave values well above the permissible limits decided by WHO. Sample BW- 5 gave maximum of phosphate, sample BW-3 show highest values of magnesium. Also dissolved oxygen results showed higher values by sample BW-5. Generally results exhibited significant variation in the parameters studied on the samples. This sample could be attributed to the geographical positions and depth of the bore wells. Hence all these Bore well water are safe and suitable for domestic and drinking purpose.

Keywords: - Physico-chemical analysis, Bore well, Beed city.

Introduction: -

Water is the most important and abundance compounds of ecosystem. All living organisms on the earth need water for their survival and growth(Dara, 1995). On earth planet have 70% of water and near about 80% of earth surface is covered by water out of which only small fraction is available for consumption. The rest of all water is closed water filled in sea and ocean ice slabs, glaciers. Ground water is defined as water that found underground in cracks and spaces in soil, sand and rocks. This source has two distinct functions, firstly it is a significant source of both rural and urban populations water supply and secondly it sustains many wetland ecosystem.(Goel et al 1985) The sources

of ground water supply mostly depend upon the rainfall and resulting percolation of the water in the earth, another important factor is the type and quality of soil(Adoni and Joshi 1987). But due to rising of human population, industrialization, uses of fertilizer in the agriculture and human domestic uses water is polluted. It is highly polluted with different contaminant. This contaminated polluted water absorbed in the earth surface. Therefore it is necessary that quality of drinking water should be checked at regular time interval, because due to use of contaminated drinking water should be suffer various disease to human and animals.(Basavraja et al 2011)



Ground water is already used throughout wells and bore wells. Unfortunately underground water reservoirs are renewed only slowly by natural absorption. Ground water is available source of water supply, because it is unpolluted due to restricted movements of pollutant in soil profile (Lamb J.C. 1985). However when water travels through the ground it dissolve part of soil components so it is usually hard, it may usually contain objectionable concentration of salt, such as metal iron, manganese, zinc etc. Near about 4 millions of people die each year from water sanitation and hygiene related causes. These all death occurs in developing world (WHO, 2008). UNDP also reported that the water and sanitation crisis claims more lives through diseases than only war claims through guns (UNDP 2006). Thus the quality as well as quantity of clean water supply is of vital signification for the welfare of mankind. Beed city is lying to the foot hill of Balaghat range of Beed district in Maharashtra state. It is less rain fall area, so location of Beed is suitable for major source as bore water for drinking and domestic use purpose. Hence bore well water are major source of good water and have been increasingly commercialized for water required population of Beed city.

The quality of this water not guaranteed and could cause health problem as a result of consumers drinking for such sources. This research investigated some physico-chemical and biological parameters of six bore well water constantly in uses by water vendors.

Material and Methods:-

Beed district is an administrative district in Maharashtra. It is situated in central place of Marathwada region out of eight districts in it. In Beed city population of 13% were compared to total population of Beed district.

For study water sample were collected from six bore well in Beed city. These samples were collected using cleaned polyethylene bottles of one liter capacity for each labeled Pinglenagar BW-1, Vidyanagar BW-2, Swarajyanagar BW-3, Kalikanagar BW-4, Chanakya puri BW-5, Panchshilnagar BW-6. This study samples were collected same time at evening 4:30 to 7:00 p.m.

These samples used for study of some physical parameters were analyzed on the bore well water samples at the site of collection. The temperature of each sample was measured and recorded using a calibrated thermometer in degree Celsius. The samples were then transferred to laboratory and they were kept in the refrigerator to preserve the quality of the sample prior to analysis. All the apparatus used for analysis were properly wash and rinsed and the reagents are all of analytical grade. Physico-chemical parameters determination by various standard method was used for P^H determination of the water samples, a digital P^H meter (Eligo Model) standardized with buffer solution of $P^H 4$ and $P^H 7.2$ was employed. The chemical parameters calcium, magnesium, alkalinity, Chloride and total hardness were determined by titrimetric method. Nitrates and phosphates were obtained using a double beam visible spectrophotometer (2203). All measurements were completed in triplicate and the mean values recorded in the table.

Results and Discussion:-

The results of all physico-chemical and biological parameters obtained in six bore well samples are presented in the following table.



Physico-chemical and biological analysis of the Six Bore Well water samples in Beed City.

Sr. No.	Parameters	BW-1	BW-2	BW-3	BW-4	BW-5	BW-6
01	Temperature(°C)	30.4	31.1	32.0	30.7	31.4	32.1
02	P ^H	8.1	8.2	7.3	8.0	7.6	8.1
03	Turbidity NTU	0.80	0.40	0.45	0.65	0.56	0.72
04	Chlorides ppm	61.3	72.5	95.5	110.0	77.0	98.0
05	Alkalinity ppm	112	108	122	98	130	118
06	Total hardness ppm	410	390	285	308	216	505
07	Calcium ppm	69	63	59	65	69	65
08	Magnesium ppm	48	76	87	45	52	75
09	Nitrates ppm	2.5	0.5	0.45	1.4	0.75	1.6
10	Phosphates ppm	1.4	2.5	2.8	0.8	3.25	2.4
11	BOD	2.2	1.8	0.8	1.0	2.0	2.4
12	COD	5.6	7.6	8.2	4.4	6.8	7.2

The water samples temperature ranged between (29.3 to 32.4°C) with the bore well. Temperature values are known to depend on season and climate condition. The P^H values recorded in this work in between (7.3 to 8.2). The values observed within the permissible limits provided by WHO. The turbidity of bore well samples was found to be in the range of (0.40 to 0.80NTU). The values compared with the 5.0 NTU WHO permissible limits for potable water. Turbidity is due to the presence of colloidal particle from clay

during rainfall, or from discharge of sewage and industrial waste.

The alkalinity is primarily due to carbonate, bicarbonate and hydroxide contents. Alkalinity, P^H and hardness affect the toxicity of many substances in the water sample.

The concentration of nitrate in water samples depends on the nitrification activity of microorganisms. The values of nitrates range between (0.45 to 2.50). The values are well below 50ppm (WHO permissible limits of nitrate in the drinking water). High level of nitrate in drinking water is due to excessive use of agriculture



fertilizers, domestic effluent, industrial sewage disposal (APHA, 1989) Water is contaminated with nitrate causing Methemoglobinemia i.e. Blue baby syndrome in infant. Chloride values in the water samples range from (61.3 to 110 ppm). The values were within the WHO (200 ppm) limit for chloride. It may also get into surface water from several sources including rock, agricultural runoff waste water.

Total hardness of water samples were found to be in the range of (216 to 505 ppm). All water samples are in the normal range given by WHO. Hardness value of ground water may be classified as soft >75 ppm, Moderately soft >(75-150 ppm), hard (150-300 ppm), and very hard >300 ppm. Total hardness less than 80 ppm may result in corrosive water, while hardness above 100 ppm may result in the need for more soap, during bathing and laundering form scum and curd causes yellowing of fabrics, excessive hardness may also lead to scale deposits in pipes, heaters and boilers.

The values of magnesium ranged between 45-87 ppm. Magnesium is a salt contribute to hardness and taste of water. Excessive magnesium may give water bitter taste, but it is not hazardous to health.

The result of phosphate analysis in the samples ranged from (0.8-3.25 ppm). All the

bore well samples gave higher values than 0.5 ppm in the permissible limit. Phosphate stimulates the growth of plankton and aquatic plant. If excess of phosphate is enter in the water body stimulate growth of algae and aquatic plant that's choke up the water way and use up large amount of oxygen. This condition is known as eutrophication or over-fertilization of receiving waters.

Biological Oxygen Demand (BOD) is measure of organic material contamination in water specified by ppm. BOD is the amount of dissolve oxygen required for biochemical decomposition of organic compounds and oxidation of certain inorganic materials. High BOD decreases levels of dissolve oxygen. All water samples having BOD ranges within permissible limit. Chemical Oxygen Demands (COD) is another measure of organic material contamination in water specified ppm. COD is the amount of dissolve oxygen required to cause chemical oxidation of the organic material in water. Both BOD and COD are key indicators of the environment health of surface water supply. They are commonly used in waste water treatment but rarely in general water treatment by Greenhalgh (2007).

References :-

1. Trivedy R. K. and Goel P. K. 1986 Chemical and biological methods for water pollution studies, Environmental publications, Karad, India pp35-40.
2. S.S.Dara (1995) A text book of environmental Chemistry and pollution Controls Chand and Company limited, pp65.
3. Basavraja, Simpi S. M., Hieremathk N.S. Murthy, K.N. Chandrashekarappa, Anil N. Patel, E. T. Puttiah, (2011). Analysis of water quality using physico-chemical parameters Hosahalli Tank in Shimoga District, Karnataka, India, Global Journal of Science Frontier, Research, 1(3), 31-34.
4. J. C. Lamb (1985) Water Quality and its Control. John Wiley and Sons, New York.
5. World Health Organization (WHO) (2008) safer water better health: Costs, benefits and sustainability of interventions to protect and promote health, updated table 1 WSH death by region 2004.



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6. Greenhalgh, Alison "Healthy living water, BBC Health Retrieved 2007-02-19.
7. APHA 1989 Standard Methods for the examination of water and wastewater, 17th Ed., American public Health Association, Washington D. C. 1131-1138.
8. Kale N. N. 2007 Ecology and socio-economic study of Manjara Reservoir, Dist. Beed Maharashtra.
9. United Nations Development programme (UNDP) 2006, Human development report 2006, Beyond scarcity: Poverty and the Global water Crisis.