



Assessment of Ground Water Quality of Various Part of Gwalior Town For Drinking Purposes

*Mahor R.K. **Kanhere R.R.*** Gupta R.B.**** Singh Beena

Water is the most essential element on the earth. It form the principal external as well as internal medium of an aquatic habitat. Water is also act as a major controlling factor of the organisms. The quality and quantity of water also have some valuable effects on the physiological activities of organism. Ground water is one of the major sources fro drinking water in many parts of Gwalior town where fresh water of Tighra not supplied due to that ground water used for domestic and drinking purpose. The ground water of various parts of Gwalior city assessed for drinking suitability 10 water sample collected from ward and source wise. The groundwater samples were analysed for Hardness of Ca⁺⁺, Mg⁺⁺ Na⁺ and TDS. There Parameter was compared with standard Limit and were found note suitable for drinking purpose without treatment. The range of TDS in ground water 40 mg/l to 2570 mg/l during the study periods.

The analyzed volume of sampled water TDS and Hardness more than the soft water (permissible value of WHO) Key - words - TDS, ISI, IS

Introduction:

The water is an Basic need for all living animals. The aquatic system are of vital importance for man who is depending largely on it for his domestic Industrial and agriculture needs. In Gwalior City water supplied from Motijheel fed by Tighra fresh water reservoir. The population Increases day by day as well as demand of water utility increases which is compensate by the groundwater of Bore well and Hand pumps. In the many area of the city people used ground water of Bore well and Hand pumps. In the present study an attempted have been to Investigated chemical and Physical suitability of ground water for drinking in the area of Gwalior City. The water sample were analysed for pH Temp. Conductivity, alkalinity Hardness of Ca⁺⁺, Na⁺⁺, Mg⁺⁺ and TDS. Similar attempt have been made in different Part of India (CK Sharma and MK

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The Study area: The study area selected in side Gwalior City. Some ward and sample sources selected for the study of Bore well and Hand pump water. In the present study area lived middle and Lower class family. Laxmiganj. Baban Payga, Sheikh ki Bagia, Jatargali, Bure Baba ki Basti, harijan Basti Goal Paharia, Ramaji Ka Pura, Katighati, Chappar Wala Pul (Shinde ki Chawni). (Shown in Table No. 1) Material and Method: 10 water sample were collected from Gwalior City ward wise Bore Well and Hand pumps water during Mansoon Period (2009). The sample were collected 2 Litter capacity Polythen cans. The temperature and pH value were measured at the site of sample collection. After collection, they were store in refrigerator until analysis as per the standard methods (APHA, 1985, Trivedy and Goel 1986).

The Physico-chemical parameter such as colour, oder, Taste, conductivity, TDS. Alkalinity, chloride and Hardness of Ca⁺⁺, Mg⁺⁺, Na⁺⁺ was determined. Result and Discussion : The analyzed physical and chemical parameters were compared with the standard specification { WHO 1984, Indian standards Institution, 1983 IS 10500 (1991 & 1993)}. The range values of analyzed Parameters are given in Table No.2. On the basis of the analyzed Parameter, the criteria for drinking purpose were determined. Some important parameter affected the suitability of ground water for drinking purpose are -pH, Alkalinity TDS. Hardness of Ca⁺, Mg⁺⁺ Na⁺⁺ etc. The TDS and salt of Ca⁺⁺, Na⁺⁺ Mg⁺⁺ present in the ground water may be injurious when they present in large quantity.

Conclusion:

The analysed sample of Present study compare with standard limits, The composition of sample water

*Asst. Prof. of Zoology, Govt. K.R.G. P.G. College, Gwalior

** Govt. P.G. College, Badwani

*** Govt. S.M.S. College, Gwalior

**** Govt. K.R.G. College, Gwalior

are within permissible Label. However, a few parameters felt at Higher of the limit and thus minimizing its suitability for drinking purpose without any treatment. The suitability for drinking purpose has been made after Filtration and also removed naturally present impurities in Bore well water.

The total Hardness of all sample are more than 40 to 675mg/l which is above the permissible limits Prescribed by WHO, ISI. The TDS range 40 mg to 2570 mg/l Higher from permissible limits by WHO ISI IS.

S.No.	Ward No.	Source No.	Study Area of Gwalior City MP
1.	1	1	Katighati
2		2	Ramaji ka Pura
3		3	Near Shamsanghat Road Laxmiganj
4	32	4	Sheikh ki Bagia near Shanti Nagar
5	33	5	Jalal Khan ki Goth near Nala
6	35	6	Bawan Payaga (Nai Sarak)
7	36	7	Chapparwala Pul, Shinde ki Chawani near Swarn Rekha Nala
8	40	8	Bhure Baba ki Basti
9	41	9	Harizan Basti near Gol Pahadia
10	48	10	Jatar Gali Near Nala

TABLE -2
ANALYTICAL RESULTS COMPARED WITH THE STANDARD SPECIFICATIONS IN THE STUDY AREA (GWALIOR)

PARAMETER	Range in the study area	WHO 1984	ISI (1983)		Desirable limits as per IS-10500, 1991 & 1993
			Highest desirable	Maximum permissible	
PHYSICAL					
1. Odour	Odorless	Un-object odour	-	-	Unobjectionable
2. Conductivity	130-2313 μ mhos/cm	-	1400	-	-
3. TDS	40 to 2570 mg/l	1000	500	1500	500
4. D.S.	35 to 1552 mg/l	-	-	-	-
5. S.S.	32 to 2081 mg/l	-	-	-	-
CHEMICAL					
1. pH	8.2 to 8.7	6.5-8.5	7.0-8.5	6.5-9.2	6.5-8.5
2. Alkalinity	25 to 490 mg/l	-	-	-	200
3. Hardnes	40 to 675 mg/l	500	0	300	300
4. Magnesium	1.3 to 19 mg/l	50	30	100	30
5. Calcium	50 to 650 mg/l	75	75	200	75
6. Sodium	6 to 160 mg/l	200	-	-	-
7. Potassium	Tracess to 67 mg/l	55	-	-	-
8 Chlorid	18 to 266 mg/l	250	250	1000	250
9. Nitrate	ND-0.18	50	-	45	45
10. Sulphate	ND-48 mg/l	400	150	400	200
11. Bicarbonate	346 mg/l	-	300	600	-

Units = mg/l

Conductivity in μ mhos/cm

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