

Physico – Chemical Analysis of surface water from Manendragarh area of Korea District, Chhattisgarh, India.

Prof. I.P.Tripathi , Renu Prajapati

Dept. of Chemistry, M.G.C.G.V. Chitrakoot (M.P.)

ABSTRACT

Water Samples were Collected from different Sources of Manendragarh area of Korea District, Chhattisgarh, India. Physico - Chemical such as pH, Total Hardness, Chlorides, TDS, Calcium Hardness (Ca^{2+}), Magnesium Hardness etc. The Variable Data of Samples are within prescribed limits as suggested by world health organization and Indian standard Institute and BIS desirable limits for drinking water for drinking purpose. Some parameters were found in some limits.

Keywords: Physico Chemical parameter, water hardness, Manendragarh City, C.G. India.

INTRODUCTION

Present paper reports result of the study of physico-chemical analysis of surface water for pH, TDS, Total hardness, calcium hardness, magnesium hardness, chloride etc. Were analyzed for a period of may month of 2015 in summer session Manendragarh, C.G. India.

MATERIAL AND METHOD

The water sample were collected during the summer session of 2015 of surface

water from Manendragarh City. Material requirement for sampling and analysis of water of intinerary for the tip, sample transport arrangement Thermometer, Tissue paper, Markers, Bottle sample containers etc. All analysis were carried out as per APHA and BIS desirable limit for drinking water. The water pH was determined by PH digital meter, Total dissolved solid in water is determined by TDS Measurement apparatus, Total hardness in water is determined by EDTA complexometric titration using EDTA solution, buffer solution, Calcium in water is determined by EDTA titrimetric method using NaoH, Ammonium purpurate, Standard EDTA solution Magnesium in water is determined by calculation from total hardness and calcium by EDTA method, Chloride ion is determined by titrating the given water sample with silver nitrate solution, potassium Chromate solution, Sodium Chloride etc(2).

RESULTS AND DISCUSSION

Table 2 shows values of surface water pH range 6.65,value of TDS(mg/L) 477.66,Total hardness(mg/L)61.33.value of Calcium hardness(mg/L) 34.836,value of Magnesium hardness(mg/L) 26.496,Chloride ion (mg/L) 11.99 etc(1).

CONCLUSION

The result of physico-chemical study of pond water sample indicate acidic nature.The tolerance pH limit is 6.5-8.5. Some sample have TDS less than 1000mg/L;hence suitable for drinking. In the present study chloride range11.99mg/l the value are much lower than permissible values.Chloride in drinking water is relatively harmless however high chloride contents in water bodies are harmful for mettalic pipes and agricultural crops(3).The comparision of analysed data with WHO(1984).ISI(1991) and BIS desirable limit for drinking water indicate that all water sample are more or less suitable for drinking.

Table 1:Physico-chemical parameters of different surface water sample

Sample	Temprature degree celcius	pH	TDSmg/L	Total hardness	Ca ²⁺ +hardness	Mg ²⁺ +hardness	Chloride mg/L
1	30.5	6.58	175	124	34.035	89.964	4.998
2	28	6.91	205	40	22.023	17.976	9.996
3	29	7.06	1100	62	34.035	27.964	4.998
4	30	7.23	35	36	14.014	21.985	Nil
5	30	6.50	550	94	82.086	11.914	14.995
6	29	7.08	295	50	14.014	35.985	4.998
7	28.50	6.14	345	32	20.020	11.979	4.99
8	30	6.98	50	34	10.010	23.989	Nil
9	28	6.10	400	80	62.065	17.935	14.99
10	29.50	6.58	1290	102	78.081	23.918	54.98
11	29	6.88	635	60	46.048	13.951	9.996
12	29	6.00	235	40	10.010	29.989	24.992
13	30.50	7.19	665	76	32.033	43.966	14.995
15	30	6.43	615	34	24.025	9.974	4.998
16	27	6.23	570	56	40.041	15.958	9.996

Table 2: showing average value of all parameter of sample

Parameter	Average value
Temperature	29.2
pH	6.65
TDS	477.66
Ca ²⁺	34.836
Mg ²⁺	26.496
Chloride	11.99
Toatal hardness	61.33

Table 3: Water Quality parameter and drinking water Standards

Parameter	Drinking Water WHO(1984) and ISI (1991)	
	Desirable	Maximum
Temperature	-	-
pH value	6.5 to	Nor elaxation
TDS mg/L	500	2000
Total hardness (as CaCO ₃)mg/L	300	600
Manganese mg/L	0.1	0.3
Ca ²⁺ mg/L	75	200
Chloride	250	1000

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