



STUDY OF PHYSICO-CHEMICAL CHARACTERISTICS IN RIVER GANGA AT BHAIRAV GHAT AND JAJAMAU BRIDGE IN 2013 IN KANPUR IN UTTAR PRADESH

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ABSTRACT

Water samples from river Ganga at Bhairav Ghat and Jajamau Bridge in Kanpur in Uttar Pradesh were collected and physico-chemical parameters were determined using standard analytical procedure in Jan. to Dec. 2013. pH (7.4-9.9), chloride and phosphate contents of water samples were determined 10-27 mg/l and 0.07-0.15 ppm respectively. Total hardness 94.7-168.4 mg/l, fluoride level also 6.0-6.3 mg/l, DO of samples were 3.0-7.2 mg/l, BOD were 2.0-15.0 mg/l and COD were 12.0-66.5 mg/l. These results were said to be in agreement with the limits set by World Health Organization (WHO) for drinking water.

Keyword: Pollution Status, WHO, Drinking Water.

I. INTRODUCTION

Water is the most essential requisite that nature has provided to sustain life on earth. About 80% of the earth's surface is covered by water. The deterioration of water quality creates various problems for mankind. The growth in population, about 90% of which occurs in urban areas, increases the demand for water for domestic and industrial uses. Water pollution from domestic and human waste is the main cause for human-borne diseases. Industrial water pollution is due to inadequate measures adopted in the industry for the abatement of pollution. It is a need of time to protect the environment for present and future generations. The purpose of this study is to prepare a qualitative assessment of abiotic and biotic conditions prevailing in the river Ganga.

II. MATERIAL AND METHOD

The Kanpur area on National Highway no.1 and 2 falls on the Broad Gauge NR Railway line between Delhi and Kolkata.

Water samples were collected in clean polythene bags and subjected to chemical analysis for measurement of different parameters such as temperature, pH, DO, BOD, COD, fluoride, chloride, phosphate, hardness and total dissolved solids by standard analytical methods in Jan. to Dec. 2013.

III. RESULT AND DISCUSSION

The values of different parameter with respect to sampling stations (Jajamau Bridge and Bhairav Ghat) are given in Table-1 and Table-2. The transparency values of samples were 21-53.0 cm. Maximum value is 53.0 in Jan.2013 at Jajamau Bridge while minimum value is 21.0 in Jan.2013 at Jajamau Bridge and in Aug.2013 at Bhairav Ghat. The temperature of water was 16.3-36.5°C. Maximum value is 36.5 in Jun.2013 at Jajamau Bridge while minimum is 16.3 in Jan.2013 at Bhairav Ghat. The WHO(1992) did not recommend any definite temperature for drinking water. The pH value were 7.4-9.9. Maximum value is 9.9 in Mar.2013 at Jajamau Bridge while minimum value is 7.4 in May,2013 at Bhairav Ghat.

Total dissolved were 135-138 mg/l. Maximum value is 139 mg/l in Jul. and Aug.2013 at Jajamau Bridge as well as in Aug.2013 at Bhairav Ghat while minimum value is 135 mg/l in Jan & Apr.2013 at Jajamau Bridge as well as in Feb. & Oct.2013 at Bhairav Ghat, which are under limits. The total hardness of water were 94.7-168.4 mg/l. The maximum value is 168.4 in May 2013 at Jajamau Bridge while minimum value is 94.7 in Oct.2013 at Bhairav ghat. The levels of hardness are below the level(300 mg/l) as laid down by Indian standard and thus water is soft. Fluoride level were 6.0-6.3 mg/l. The maximum value is 6.3 in Jul.2013 at Jajamau Bridge & Bhairav Ghat while minimum value is 6.0 in May,2013 at Bhairav Ghat, which are low. The chloride contents were 10-27 mg/l. The maximum value is 27 mg/l in Mar..2013 at Jajamau Bridge while minimum value is 10 mg/l in Aug.& Sept.2013 at bhairav Ghat, which is below the prescribed limit (250 mg/l). The COD value were 12.0-66.5 mg/l. The maximum value is 66.5 mg/l in Oct.2013 at Jajamau Bridge while minimum value is 12 mg/l in Jul. & Aug.2013 at Bhairav Ghat.

The DO values were 3.0-7.2 mg/l. The maximum value is 7.2 in Jan.2013 at Bhairav Ghat while minimum value is 3.0 in Apr.2013 at Jajamau Bridge, which are permissible. The BOD values were 2.0-15.0 mg/l. The maximum value is 15.0 in May2013 at Jajamau Bridge while minimum value is 2.0 in Jul. & Aug.2013 at Bhairav Ghat.

Table-1 Physico-chemical characteristics in river Ganga at Jajamau Bridge, Kanpur

Month	Temperature (°C)	Transparency cm	pH	DO mg/l	BOD mg/l	COD mg/l	Chloride ppm	Phosphate mg/l	Total hardness mg/l	TDS mg/l	Fluoride mg/l
Jan.	16.4	53.0	9.7	5.3	13.0	56.0	25.0	0.11	113.2	135	6.1
Feb.	18.4	52.3	9.8	5.2	12.0	64.0	25.0	0.11	108.1	136	6.1
Mar.	23.5	40.0	9.9	4.9	14.0	65.0	27.0	0.08	150.2	136	6.2
Apr.	31.4	37.0	8.8	3.0	15.0	60.0	26.0	0.09	158.3	135	6.1
May	35.2	30.0	8.6	4.3	14.0	65.5	26.0	0.10	168.4	136	6.0
Jun.	36.5	21.0	8.9	3.5	14.0	65.0	22.0	0.15	168.3	137	6.2
Jul.	28.6	26.0	9.4	3.5	13.0	55.5	15.0	0.09	98.4	139	6.3
Aug.	23.2	22.0	9.3	3.9	13.0	55.5	14.0	0.08	99.4	139	6.2
Sept.	24.7	26.0	8.6	4.2	13.0	60.0	16.0	0.07	98.2	138	6.1
Oct.	18.6	29.5	8.2	4.8	14.0	66.5	19.0	0.09	102.4	136	6.1
Nov.	18.3	36.0	9.5	5.1	12.0	60.1	21.0	0.12	114.2	136	6.2
Dec.	18.2	50.0	9.4	5.1	12.0	60.0	22.0	0.13	115.1	137	6.1

Table-2 Physico-chemical characteristics in river Ganga at Bhaieav Ghat,Kanpur

Month	Temperature °C	Transparency cm	pH	DO mg/l	BO D mg/l	CO D mg/l	Chloride ppm	Phosphate mg/l	Total hardness mg/l	TDS mg/l	Fluoride mg/l
Jan.	16.3	52.0	8.3	7.2	3.5	35	15	0.12	114.2	134	6.1
Feb.	18.2	52.5	8.2	6.8	3.0	34	14	0.11	106.2	135	6.2
Mar.	23.1	39.0	8.1	6.5	4.0	34	16	0.13	135.5	136	6.1
Apr.	31.6	37.5	7.8	4.0	4.5	39	15	0.14	155.2	136	6.1
May	35.8	31.0	7.4	4.8	4.0	38	14	0.14	158.2	135	6.0
Jun.	36.0	21.5	7.9	4.2	5.0	13	15	0.16	160.3	136	6.2
Jul.	28.4	37.0	7.6	5.4	2.0	12	11	0.15	97.4	137	6.3
Aug.	23.9	21.0	7.9	5.9	2.0	12	10	0.15	97.5	139	6.2
Sept.	24.8	26.0	7.8	6.2	3.5	28	10	0.14	99.6	138	6.1
Oct.	18.1	27.0	8.2	6.8	3.5	29	11	0.13	94.7	135	6.1
Nov.	18.8	37.5	8.4	6.7	2.5	28	14	0.12	95.8	136	6.2
Dec.	18.2	49.5	8.1	6.9	2.5	36	15	0.12	95.9	137	6.1

IV. CONCLUSION

It is need of time to protect environment for present and future generation. The purpose of study is to prepare qualitative assessment of biotic and abiotic conditions prevailing in river Ganga.

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