International Journal of Advanced Technology in Engineering and Science
Vol. No.3, Special Issue No. 01, November 2015
www.ijates.com
ijates
ISSN 2348 - 7550

STUDY OF POLLUTION STATUS IN RIVER GANGA AT GOLA GHAT,BITHOOR GHAT AND BHAIRAV GHAT IN 2013 IN KANPUR IN UTTAR PRADESH

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ABSTRACT

Water samples from river Ganga at Gola Ghat , Bithoor Ghat, Jajamau Bridge and Bithoor Ghat in Kanpur in Uttar Pradesh were collected and physico-chemical parameters were determined using standard analytical procedure in Jan.to Dec.2013. pH (7.1-9.3), chloride and phosphate contents of water samples were determined 09-25 mg/l and 0.04-0.16 ppm respectively. Total hardness 92.4-166.1 mg/l, fluoride level also 6.0-6.3 mg/l, DO of samples were 4.0-8.4 mg/l, BOD were 2.0-7.5 mg/l and COD were 08-40 mg/l. These results were said to their agreed with the limits set by World Health Orgnization (WHO) for drinking water.

Keyword: Pollution Status,WHO, Drinking Water.

I. INTRODUCTION

Water the most essential requisites that nature has provided to sustain life on earth. About 80% earth surface is covered by water. The deteriorate quality of water create various problems for mankind. The growth in population, about 90% of which occur in uebon area, increases the demand for water for domestic and industrial uses. Water pollution from domestic and human waste is the main cause for human being water born desease. The industrial water pollution is due to inadequate measure adopted in the industry for the abatement of pollution. It is need of time to protect environment for present and future generations. The purpose of study into prepares qualitative assessment of abiotic and biotic conditions prevailing in river Ganga.

II. MATERIAL AND METHOD

The Kanpur on National Highway no.1 and 2 falls on 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 by standered analytical methods in Jan. to Dec.2013.

III. RESULT AND DISCUSSION

The values of different parameter with respect to sampling stations (Gola Ghat , Bhairav Ghat and Bithoor Ghat) are given in Table-1,2 and 3.The transparency values of samples were 19.5-56.5 cm. Maximum value is 56.5 in Jan.2013 at Bithoo Ghat while minimum value is 19.5 in Jun.2013 at Gola Ghat. The temperature of water was 16.1-36.8^{0}C. Maximum value is 36.8 in Jun.2013 at Bithoor Ghat while miminum is 16.1 in Jan.2013 at Bithoor Ghat. The WHO(1992) did not recommend any definite temperature for drinking water. The pH value were 7.1-9.3. Maximum value is 9.3 at Jan.2013 at Gola Ghat while minimum value is 7.1 in May,2013 at Bithoor Ghat.

Total dissolved were 134-138 mg/l. Maximum value is 139 mg/l in Jul. and Aug.2013 at Gola Ghat as well as in Aug.2013 at Bhairav Ghat while minimum value is 134 mg/l in Jan at Bithoor Ghat and at Bhairav Ghat, which are under limits. The total hardness of water were 92.4-166.1 mg/l. Maximum value is 166.1 in Jun.2013 at gola Ghat while minimum value is 92.4 in Oct.2013 at Bithoor 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 Gola Ghat & Bhairav Ghat while minimum value is 6.0 in May,2013 at Bhairav Ghat, which are low. The chloride contents were 09-25 ng/l. The maximum value is 25 mg/l in Mar.& Apr.2013 at Gola Ghat while minimum value is 09 mg/l in Aug.at bitgoor Ghat, which is below the prescribed limit (250 mg/l). The COD value were 08-40 mg/l. The maximum value is 40 mg/l in Dec.2013 at Gola Ghat while minimum value is 08 mg/l in Jul. & Aug.2013 at Bithoor Ghat.

The DO values were 4.0-8.4 mg/l. The maximum value is 8.4 in Nov.2013 at Bithoor Ghat while minimum value is 4.0 in Apr.2013 at Bhairav Ghat ,which are permissible. The BOD values were 2.0-7.5 mg/l.The maximum value is 7.5 in Mar..2013 at Gola Ghat while minimum value is 2.0 in Jul. 2013 at Bithoor Ghat.

Table-1Physico-chemical characterstics in river Ganga at Gola Ghat,Kanpur

Month	Temp. (^{0}C)	Trans. (cm)	pH	DO (mg/l)	BOD (mg/l)	COD (mg/l)	Chloride (mg/l)	Phosphate (ppm)	Total hardness (mg/l)	TDS (mg/l)	Fluoride (mg/l)
Jan.	16.7	52.5	9.3	7.1	5.5	36	21	0.10	111.2	135	6.1
Feb.	18.7	52.5	9.2	6.9	5.5	35	22	0.12	107.4	136	6.1
Mar.	23.2	39.5	9.1	6.4	7.5	35	25	0.11	143.8	136	6.2
Apr.	31.1	36.5	8.3	6.6	7.0	35	25	0.14	155.1	135	6.1
May	35.6	20.5	8.2	5.2	7.5	38	23	0.08	160.1	136	6.0
Jun.	36.4	19.5	8.2	5.0	7.0	30	23	0.10	166.1	137	6.2
Jul.	28.4	22.0	8.2	5.4	6.5	36	19	0.05	98.9	139	6.3
Aug.	23.5	20.0	9.2	5.9	6.5	36	19	0.06	98.8	139	6.2
Sept.	24.2	25.0	8.9	6.2	7.0	35	18	0.06	96.6	138	6.1
Oct.	18.4	29.5	8.6	6.8	7.5	36	18	0.09	99.7	136	6.1
Nov.	18.6	37.0	9.1	7.0	6.0	35	19	0.10	110.4	136	6.2
Dec.	18.3	49.0	9.0	7.1	6.0	40	19	0.11	111.1	137	6.1

Table-2 Physico-chemical characterstics in river Ganga at Bhairav Ghat,Kanpur

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

Table-3 Physico-chemical characteristics in River Ganga at Bithoor Ghat

Month	Temp. (^{0}C)	Trans. (cm)	pH	DO (mg/l)	BOD (mg/l)	COD (mg/l)	Chloride (mg/l)	Phosphate (/ppm)	Total hardness (mg/l)	TDS (mg/l)	Flouride (mg/l)
Jan	16.1	56.5	75	8.1	2.5	24.0	13.0	0.07	112.6	134	6.1
Feb	18.9	54.5	7.7	7.8	3.0	29.0	11.0	0.08	104.2	135	6.2
Mar	22.9	40.5	7.3	7.6	4.0	28.0	15.0	0.09	130.2	136	6.1
Apr	31.2	38.0	7.6	7.8	4.5	28.0	16.0	0.06	148.2	136	6.1
May	35.0	30.0	7.1	6.2	4.0	13.0	15.0	0.04	150.2	135	6.0
Jun	36.8	20.5	7.2	5.0	5.0	12.0	16.0	0.04	156.1	136	6.2
Jul	28.1	28.0	7.8	6.3	2.0	8.0	10.0	0.05	96.2	137	6.3
Aug	23.0	21.0	7.7	7.1	2,0	8.0	9.0	0.05	98.2	138	6,2
Sep	24.1	27.0	7.9	7.4	3.5	13.0	16.0	0.06	97.8	138	6.1
Oct	18.2	29.0	7.8	8.2	3.5	18.0	10.0	0.06	92.4	135	6.1
Nov	18.1	35.0	8.1	8.4	2.5	24.0	12.0	0.07	97.4	136	6.2
Dec	18.1	48.0	8.5	8.0	2.5	25.0	13.0	0.08	96.3	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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