



# STUDY OF POLLUTION STATUS IN RIVER GANGA AT PERMUT GHAT AND BHAIKAV GHAT IN 2013 IN KANPUR IN UTTAR PRADESH

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## ABSTRACT

Water samples from river Ganga at Permut Ghat and Bhairav Ghat and in Kanpur in Uttar Pradesh were collected and physico-chemical parameters were determined using standard analytical procedure in Jan.to Dec.2013.pH (7.4-9.1 ),chloride and phosphate contents of water samples were determined 10-18 mg/l and 0.08-0.16 ppm respectively.Total hardness 94.6-160.9 mg/l,fluoride level also 6.0-6.3 mg/l,DO of samples were 4.0-7.4 mg/l, BOD were 2.0-6.5 mg/l and COD were 12.0-39 mg/l.These results were said to their agreed with the limits set by World Health Organization (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 urban 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 disease.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 standard analytical methods in Jan. to Dec.2013.

### III. RESULT AND DISCUSSION

The values of different parameter with respect to sampling stations (Permut Ghat and Bhairav Ghat) are given in Table-1 and Table-2. The transparency values of samples were 21.0-54.5 cm. Maximum value is 54.5 in Jan. 2013 at Bhairav Ghat while minimum value is 21.0 in Aug. 2013 at Permut Ghat. The temperature of water was 16.2-36.2°C. Maximum value is 36.2 in Jun. 2013 at Bhairav Ghat while minimum is 16.2 in Jan. 2013 at Bhairav Ghat. The WHO (1992) did not recommend any definite temperature for drinking water. The pH values were 7.4-9.1. Maximum value is 9.1 in Dec. 2013 at Bhairav Ghat while minimum value is 7.4 in May, 2013 at Bhairav Ghat.

Total dissolved were 134-140 mg/l. Maximum value is 140 mg/l in Jul. 2013 at Bhairav Ghat while minimum value is 134 mg/l in Jan. 2013 at Permut Ghat, which are under limits. The total hardness of water was 94.6-160.9 mg/l. The maximum value is 160.9 in Jun. 2013 at Bhairav Ghat while minimum value is 94.6 in Sept. 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 levels were 6.0-6.3 mg/l. The maximum value is 6.3 in Jun. & Jul. 2013 at Bhairav Ghat and in Jul. 2013 at Permut Ghat while minimum value is 6.0 in Apr. 2013 at Bhairav Ghat and in May at Permut Ghat, which are low. The chloride contents were 10-18 mg/l. The maximum value is 18 mg/l in Jun. & Dec. 2013 at Jajamau Bhairav Ghat while minimum value is 10 mg/l in Aug. & Sept. 2013 at Permut Ghat, which is below the prescribed limit (250 mg/l). The COD values were 12.0-39.0 mg/l. The maximum value is 39.0 mg/l in Apr. 2013 at Permut Ghat while minimum value is 12 mg/l in Jul. & Aug. 2013 at Permut Ghat.

The DO values were 4.0-7.4 mg/l. The maximum value is 7.4 in Dec. 2013 at Bhairav Ghat while minimum value is 4.0 in Jun. 2013 at Permut Ghat, which are permissible. The BOD values were 2.0-6.5 mg/l. The maximum value is 6.5 in Jan. & Jun. 2013 at Bhairav Ghat while minimum value is 2.0 in Jul. & Aug. 2013 at Permut Ghat.

**Table-1 Physico-Chemical Characteristics in River Ganga at Permut Ghat, 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.	16.2	54.5	8.8	7.0	6.5	37.0	18.0	0.14	110.2	135	6.2
Feb.	18.8	53.5	8.7	6.5	6.0	36.0	17.0	0.14	105.7	135	6.2
Mar.	23.4	40.0	8.5	4.2	6.0	36.0	17.0	0.14	136.6	136	6.1
Apr.	31.8	38.5	8.7	5.2	5.0	30.0	16.0	0.15	148.7	136	6.0
May	35.7	28.0	7.9	5.8	5.5	38.0	16.0	0.12	156.3	138	6.2
Jun.	36.2	22.0	8.0	6.1	6.5	29.0	15.0	0.16	160.9	139	6.3
Jul.	28.6	26.0	8.8	6.2	4.0	29.0	15.0	0.15	95.7	140	6.3
Aug.	23.4	22.0	8.9	6.5	4.0	28.0	15.0	0.16	96.3	138	6.2
Sept.	24.6	25.0	8.9	6.0	4.5	25.0	16.0	0.12	94.6	137	6.2



Oct.	18.3	27.5	8.4	6.8	3.5	36.0	17.0	0.09	95.4	136	6.1
Nov.	18.0	36.5	9.0	7.2	3.5	28.0	16.0	0.08	97.6	137	6.2
Dec.	18.4	50.5	9.1	7.4	3.0	36.0	18.0	0.09	98.6	137	6.1

**Table-2 Physico-Chemical Characterstics in River Ganga at Bhaieav Ghat,Kanpur**

Mon th	Temp eratur e( <sup>0</sup> C)	Transp arency( cm)	pH	DO(m g/l)	BOD (mg/l)	COD( mg/l)	Chlori de(pp m)	Phospha te(mg/l)	Total hardness( mg/l)	TDS( mg/l)	Flu orid e(m g/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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