

PHYSICO-CHEMICAL PARAMETERS OF KELO RIVER WATER**Reenu Mishra*¹, P.K. Singh², M.M Vaishnav³****¹K.G.Arts & Science College, Raigarh****²Govt TCL College, Janjgir****³Govt.Gramya-Bharti College, Hardibazar***Corresponding Author's E mail: reenu.mishra.ap@gmail.com

Received 12 June. 2024; Revised 16 June. 2024; Accepted 22 June. 2024, Available online 10 July. 2024



Cite this article as: Mishra R, Singh PK and Vaishnav MM. Physico-Chemical Parameters of Kelo River Water. Asian Journal of Pharmaceutical Education and Research. 2024; 13(3): 178-185.

<https://dx.doi.org/10.38164/AJPER/13.3.2024.178-185>**ABSTRACT**

Water is a gift given by nature to mankind. Due to several activities water is polluted. Water pollution is one of the major problem faces by mankind. At our present study we collect water sample from 8 different sampling spot at Preemonsoon session (April 2023 to June2023) and analyse several water quality parameters. We find that water is polluted. Several parameters like turbidity, TS, TSS, Hardness, Nitrate Concentration, Chloride Concentration, Biological Parameters are higher than permissible limit. DO, COD and BOD value also Suggest That water is polluted. So, the continuous monitoring of water sources is need of time.

Keywords: Water Quality Index, Biological Oxygen Demand, Chemical Oyen Demand.**INTRODUCTION**

At present it's become verry difficult to get pure water. We all know that without water life is not possible. Due to its unique nature, it plays verry important role in several biological process. Now a days due to several reasons water sources become polluted. For aquatic environment ¹. Parameters like dissolve oxygen, chemical oxygen demand, and chlorophyll are important parameters. Oxygen is important for aquatic environment, low DO level exhibit pollution level ². Kelo River is main sources of water for Raigarh City. It originates from Ludeg Pahadi.

Several industries (small and large), steel plant, thermal power plant, Sponge Iron steel industries are situated in the bank of Kelo River.

Industrial effluents, domestic sewage, agricultural run-off, municipal corporation dump the waste water in Kelo River.

Kelo is life line of Raigarh. Kelo is one of the main tributaries of Mahanadi. Its water is used for several purposes. In present study we collect water sample from eight different spot. And analyse

the different water quality parameter. Various species of bacteria that are commonly found in nature are grouped as Total coli-form³. Animal discharge from leaching of animal manure, septic and sewage discharge, water run-off, waste of human and domestic animals are sources of Coli forms⁴. Hardness is the measure of concentration of Ca⁺⁺ and Mg⁺⁺ in water⁵. Heavy metals are persistent, non-biodegradable, and bio-accumulate through food-chain, they did not decay with time, may be useful for plants and animals when present in small amount but can be harmful when exceeding specific threshold⁶.

METHOD

SAMPLE COLLECTION

Water sample is collected from five different spot and labelled. Water sample was collected in plastic bottle.

Table-1, Sampling Spot

S.NU	SAMPLEING SPOT	SAMPLE NAME
1	CHAKRAPATH	S-1
2	CHATT-GHAT	S-2
3	RANIGHAT	S-3
4	KELO -DAM	S-4
5	LAKHA	S-5
6	CHIRAIPANI	S-6
7	TARAIMAL	S-7
8	GERWANI	S-8

Table-2 Pree-Monsoon

S. NO	Parameter	Chakra path	Rani Ghat	Chatt Ghat	Kelo Dam	Lakha	Chiraipani	Taraimal	Gerwani
1	Temperature	38	37	37	39	39	39	36	36
2	pH	8.04	7.4	7.66	7.68	7.73	7.88	7.90	7.68
3	EC	620	502	532	482	1874	1878	962	620
4	Turbidity	39.7	11.4	20.3	10.5	16.6	29.4	45.4	19
5	Total solid	1045	326	345	205	1367	690	450	690
6	Total dissolved solid	195	38	51.5	25.5	106.3	25.1	22.1	35.5
7	TSS	850	288	292.5	199.5	1269.7	664.9	427.9	654.5
8	Total Alkalinity	135.7	49.5	56.88	48.35	130.5	90.54	44.56	35.45
9	Total Hardness	65.45	52.45	60.45	57.87	56.64	37.85	124.67	90.58
10	Ca Hardness	- 23.25	32.25	24.58	24.52	29.32	25.45	78.35	52.45

11	Mg Hardness	–	42.2	20.2	35.92	33.35	27.32	12.4	46.42	38.13
12	Fluoride		0.75	0.43	0.62	0.30	0.32	0.59	1.06	0.45
13	Chloride		14.45	13.23	11.26	14.23	15.34	22.23	26.45	20.23
14	NO3-		15.45	23.45	13.65	18.76	16.75	18.65	16.54	20.23
15	SO4--		87	76	68	87	68	18.5	4.53	5.56
16	PO43-		5	5.3	4.2	3.5	6.2	5.6	3.6	4.5
17	Total Coli forms		38	22	2.1	23	10	3.1	02	04
18	Faecal Coli forms		22	17	0.0	08	1.1	0.0	0.0	03
19	DO		1.8	4.6	2.8	3.8	2.7	2.4	3.8	2.9
20	BOD		5.8	3.2	1.8	1.02	2.9	1.6	2.23	1.8
21	COD		552	178	210	201	156	276	268	317

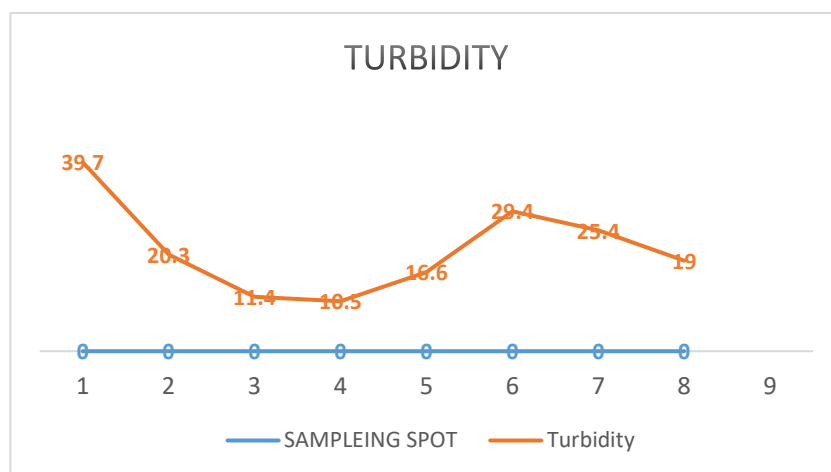


Fig-1 Turbidity at various Sampling Station



Fig-2 Total Solid At various sampling Spot

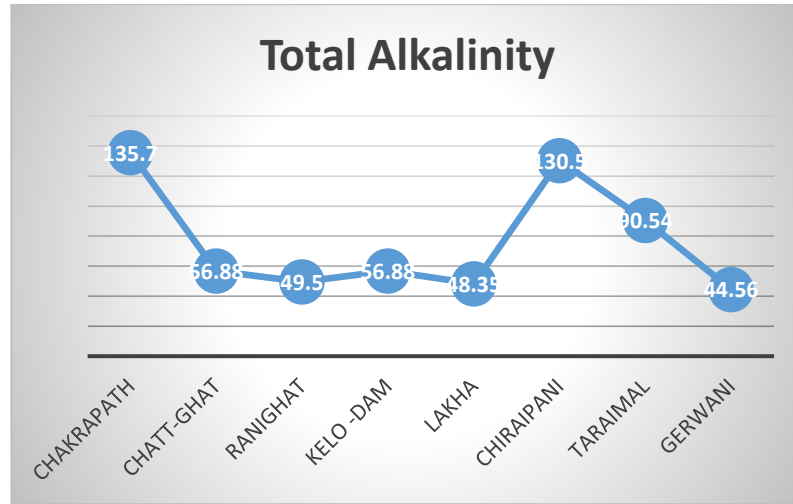


Fig-3 Total Alkalinity at Various Sampling Spot

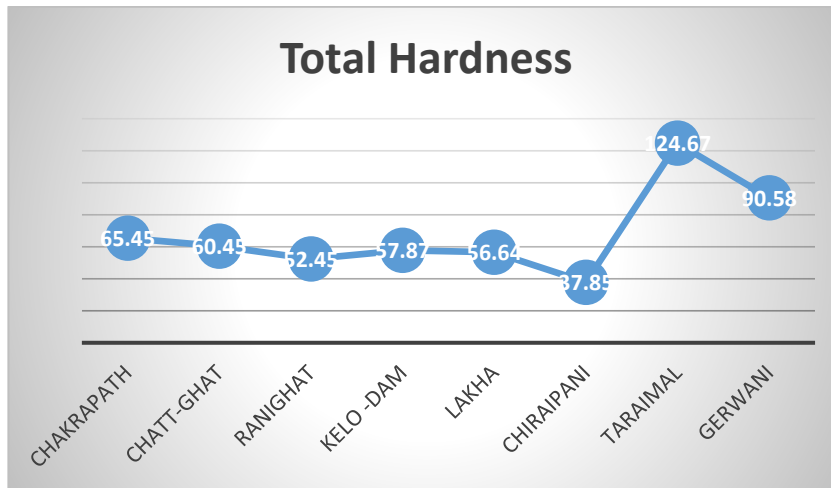


Fig.-4 Total Hardness at Various sampling Spot

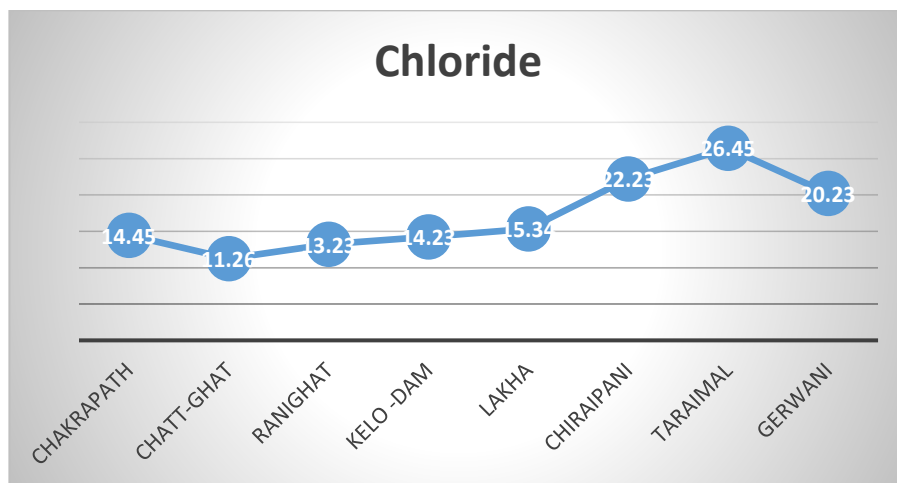


Fig.-5 Chloride Concentration at Various Sampling Spot

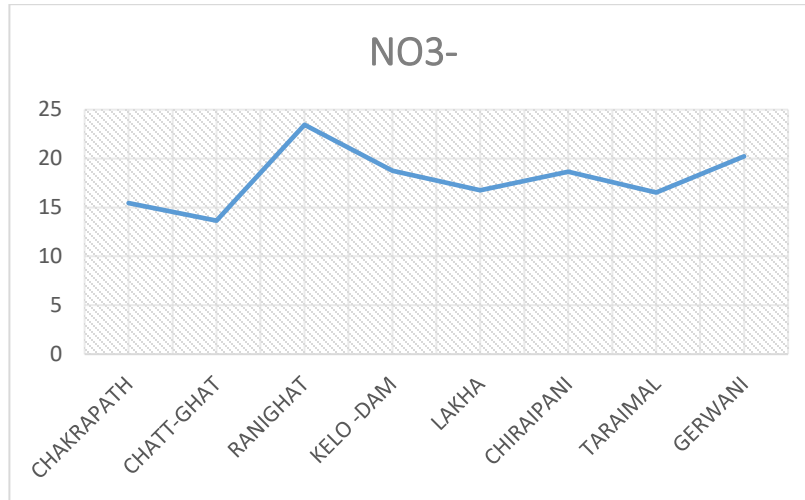


Fig. -6 NO3- Concentration at Various Sampling Spot

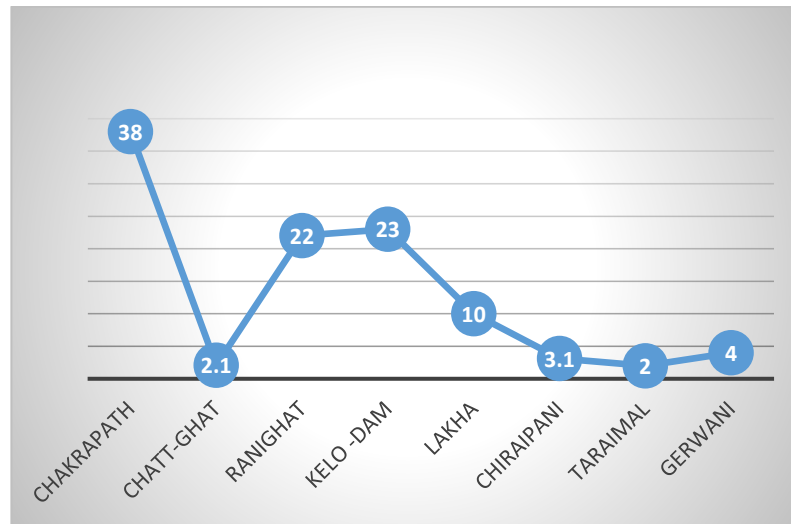


Fig.7- Total Coli Form at different Sampling Spot

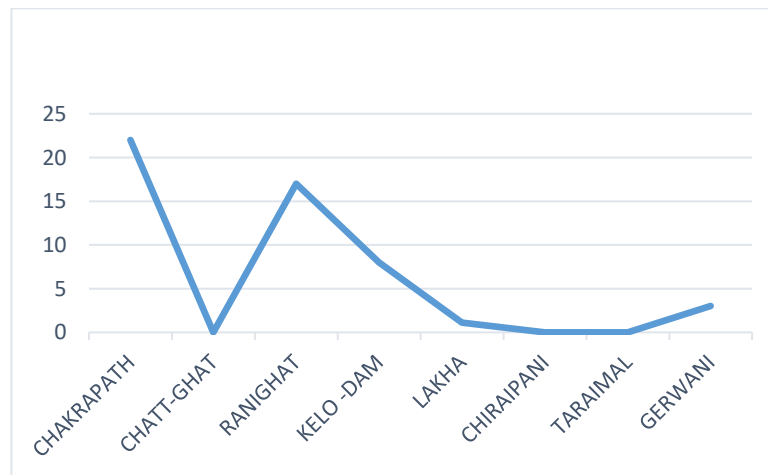


Fig.8- Faecal Coli Forms at different Sampling Spot

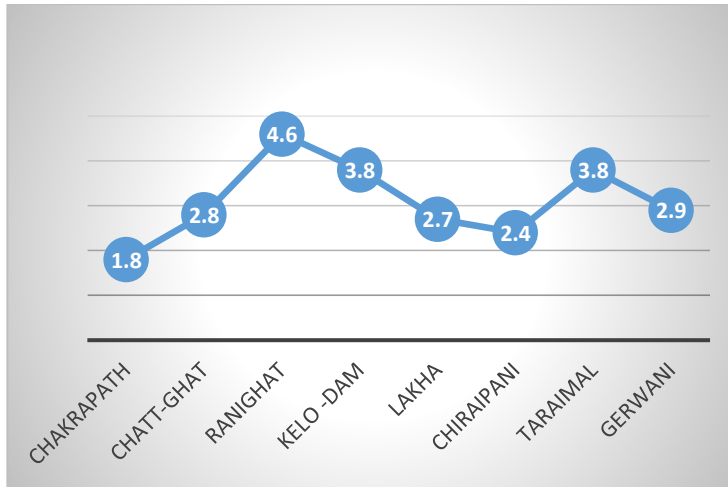


Fig.9- DO at various Sampling Spot

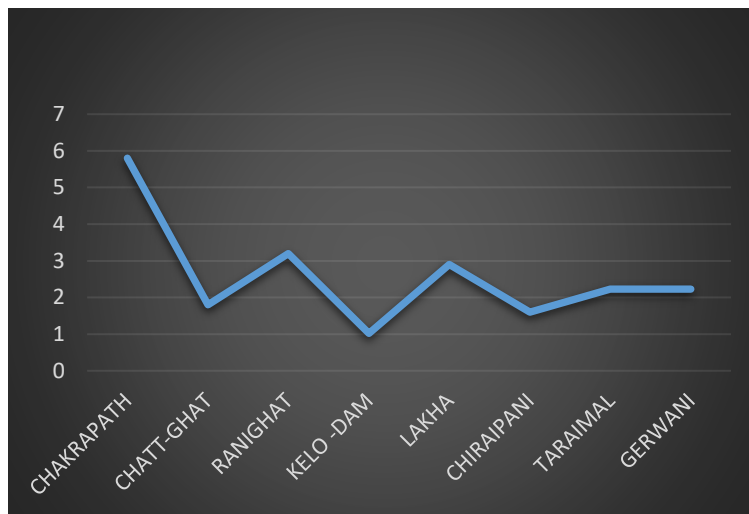


Fig.10- BOD Level at various Sampling Spot

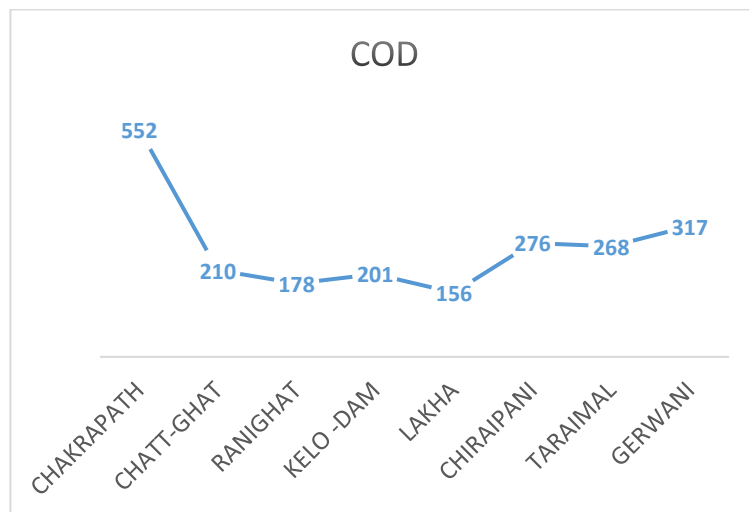


Fig. 11 COD at different Sampling Spot

RESULT AND DISCUSSION

Temperature is found between 36⁰C TO 39⁰C Sampling spot had highest temperature. pH value ranges between 7.4 To 7.9. Hardness value is maximum for sampling spot Taraimal. Chloride concentration is much higher in Sampling spot 7. DO value is lowest in sampling spot 1, which indicates the pollution level. BOD and COD values of various sampling spot also confirm the pollution level. COD is measurement of pollution level.10Bacteriological parameters indicate the presence of pathogenic micro-organism. Microbiological parameter is due to the dump of sewage. Due to industrial effluent and agriculture un-off concentration of sulphate, nitrate, Phosphate and chloride were also detected in sample water.

CONCLUSION

Water is necessary for all living beings. Our present study indicates the Kelo River water is polluted. So, it is the need of time that all the water quality parameters should analysed before we use Kelo river water. Continuous monitoring is also necessary. WQI indicates the pollution level. because kelo is main sources of water for raigarh, Control of pollution level is also necessary. Many people when they drank > 1000 mg of Sulphate they experience laxative effects ^{7,8}.

The intake of water containing more than 250mg/L chloride concentration may cause hypertension⁹.Soil properties like swelling, porosity, water retention and permeability are deleterious affected by salinity and thus indirectly affects plant growth.¹⁵ Phosphate concentration favour bacterial growth¹¹. Excess phosphate in water results increased BOD and decrease in DO¹². positive corelation found between phosphate, nitrate and chloride ¹³. Ingested nitrite and nitrate can lead to endogenous nitrosation, are probably carcinogenic ¹⁴.

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