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**STUDY OF PHYSICOCHEMICAL PARAMETERS RIVER KHAN**

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**ABSTRACT**

Water quality is closely linked to water use and to the state of economic development. Water pollution occurs when unwanted pollutants are discharged directly or indirectly into water bodies without adequate treatment to remove harmful compounds. Water pollution affects plants and organisms living in water bodies and also to the natural biological communities.

The present study is to assess the quality of river Khan at Triveni, Ujjain. Khan River flows from Indore via Sanwer it reaches Ujjain and joins Kshipra at Triveni. There are several industries in Indore, which throw their effluents in the river and it receives untreated sewage, drainage, run off from farms from the villages which are situated at the bank of this river. Though Bhangarh treatment plant has been setup at Indore to treat river Khan, only 30% of the river is being treated while rest of the water is untreated. Hence this source has been rendered unsafe for human consumption.

Samples were collected from two sampling stations in the month of November. Their physicochemical analysis indicates that river water is highly polluted, BOD, COD, turbidity and TDS values are very high indicating that the water body is not fit for use.

**Keywords:**

*Pollutants, effluents, treatment plant, biological communities.*

**INTRODUCTION**

The quality of life on Earth is linked inextricably to the overall quality of the environment. In early times, we believed that we had an unlimited abundance of land and resources; today, however, the resources in the world show, in greater or lesser degree, our carelessness and negligence in using them. The problems associated with contaminated sites now assume increasing prominence in almost all over the Earth and the estimated number of contaminated sites is significant. [1].

Water is the resource that sustains all life on earth and is a key element of sustainable development. Ecosystems are also inextricably linked with water. Water pollution occurs when energy and other materials are released, degrading the quality of the water for other users. Water pollution includes all of the waste materials that cannot be naturally broken down by water. A toxic substance is a chemical pollutant that is not a naturally occurring substance in aquatic ecosystems [2, 3].

The present study deals with this criteria with reference to the site Triveni where Khan River joins the Kshipra and it enters Ujjain city. Khan River's route from Indore to Ujjain is crowded on both the sites by number of industries which pour their effluents whether treated or untreated in to it. Hence it becomes necessary to study the pollution level of river Khan.

## MATERIALS AND METHODS

In present study physicochemical parameters of the river Khan were analyzed at two different sampling stations, which were selected for sample collection. First sampling station is of Khan River before confluence to Kshipra, second where it joins Kshipra River. Physicochemical parameters studied were; pH, BOD, turbidity, MPN, TDS, Chloride, Total alkalinity, Total hardness and DO by using methods from APHA, AAWA and WPCA[4].

## OBSERVATION

**Table 1:** Study of physicochemical parameters

Test type	At Khan river Station I	At the Khan river joins Kshipra Station II	Standard
pH	8.1	8.1	6.5-8.5
TDS(in ppm)	750	600	1000
Turbidity(in NTU)	23	24	5
Chloride(in mg/liter)	220	265	30
Total alkalinity (inmg/liter)	380	370	110
BOD (in mg/liter )	30	26	<=5
MPN(in g/liter )	1100	920	3
Total Hardness(in mg/liter)	524	500	100
DO in mg/liter at 35 <sup>0</sup> C	3.0	3.6	

## RESULT AND DISCUSSION

The values of physicochemical parameters show that water is highly polluted. Turbidity, chloride, total alkalinity, BOD, total hardness is 3to5 times higher than standard values [5, 6]. MPN value is 300times higher than standard value, which indicates that the quality of water is poor and cannot be used for any purpose. The value of DO is far less than standard value which affects the aquatic flora and fauna adversely. The study clearly indicated that river Khan is highly polluted. It carries these pollutants to Kshipra River thereby polluting it also [7, 8].

These pollutants are harmful for the human health, aquatic flora and fauna therefore it is necessary to add treated effluent in the river or detoxify the effluent through the process of bioremediation for healthy environment.

## REFERENCES

1. Ahearn, D.S., Sheibley, R.W., Dahlgren, R.A., Anderson, M., Johnson, J., Tate K.W., 2005. Land use and land cover influence on water quality in the last free-flowing river draining the western Sierra Nevada, California. *J. of Hydrology* 313, Issues 3-4, 234-247.
2. Ramesh Janjala and M.M. Vaishnav, Physico-chemical monitoring and statistical evaluation of surface water in Korba District, C.G. India. *Indian Journal of Environmental Sciences* Vol.16, No.1(2012).
3. Rastogi G.K. and Simha D.K., A novel approach to water quality management through correlation study, *J. Environ. Res. Develop.*,5(4), 1029-1035, (2011)
4. American Public Health Association (APHA), 2005. *Standard Methods for the Examination of Water and Wastewater* sec. 9.21, 21st ed., Washington DC.

5. *World Health Organization, 2003. Quantifying selected major risks to health. The World Health Report 2002. World Health Organization, Geneva (Chapter 4).*
6. *World Health Organization, 2010. Progress on Sanitation and Drinking-Water: 2010 Update. WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland .*
7. *Sirajudeen J. and Abdul Vahith R. Applications of water quality index for groundwater quality assessment on Tamil Nadu and Pondicherry, India. Journal of Environmental Research And Development Vol. 8 No. 3, January-March( 2014).*
8. *Desai B. and Desai H. Assessment of water quality index for the ground water with respect to salt water intrusion at coastal region of Surat city, Gujrat, India. Journal of Environmental Research And Development Vol.7No.2, October-December (2012).*