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Assessment of water quality in the vicinityof Municipal water pumping station, of river Wainganga at Pauni, District-Bhandara (Maharashtra)

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ABSTRACT

Present study deals with the pollution of Wainganga river at municipal water pumping station with special emphasis on the pollutants originated from the human domestic activities and wrong way of agricultural practices. As Large amount of organic pollutants enters in the river flow that alters the water quality parameters. The effect of pollution mainly comes in sight during summer season. It increases the temperature of water, lowers the dissolved oxygen contents, increases the biochemical oxygen demand, total dissolved solids, ionic contents and resulted in eutrophication of the river water. The daily input of organic pollutants in river water by human domestic practices on the bank of river, such as washing of utensils, cloth washing, cattle washing on the bank of river, deteriorate the river water. During summer the condition becomes more miserable as the river basin agriculture contributes to the decaying of organic pollutants.

Key Words: Pollution, BOD, human activities, river basin agriculture.

INTRODUCTION

Of all the planet's renewable sources, water has a unique place. It is essential for sustaining all forms of life, food production and economic development and for general well being. Due to tremendous increase of human population and the domestic activities of the peoples related to water, the aquatic ecosystem perceptibly altered in several aspects in recent years. Water is regarded as a polluted when it is changed in its quality or compositions directly or indirectly as a result of human activities, so that it becomes less suitable for drinking as well as domestic and other purposes. Many of the rivers and lakes are becoming increasingly murky, smelly and choked with growth of algae. Most of the rivers have become darkened with sewage, effluents, agricultural runoff etc. Natural waters are no longer capable of composing these impurities (Bobde *et al.* 2009 Abidin *et al. 2009*)

Natural water has a self purification capacity, as the polluted river water get cleaned along the stretch by settling down the solids and biodegradation of organic wastes. But it has its own limit, (Pande and Sharma, 1998). Nature itself is a great cleansing agent but as for as capacity of assimilation of pollutants is concern, river water has limitations. The conservation and efficient utilization of available water resources need maximum emphasis. Some of recent relevant studies on physic-chemical parameters have been made by Khajuria and Dutta,(2009), Sawane et al., (2009), Fotedar and Fotedar (2009) and Yadav et al., (2009).

MATERIAL AND METHODS

A work plan was conceived for the present investigation, to study the water quality of Wainganga river in the vicinity of Pauni town. Pauni town is located within Bhandara district, 87 Kms south east from Nagpur (Maharshtra), in central India, on the bank of Wainganga river. To assess the quality of river water and impact of human activities on the water quality and also to gain the information about the extent of pollution the proposed work is aimed at devising ecologically sound new strategies for conservation of river through prevention of pollution emphasizing appraisal of environmental status of river, by studying physicochemical parameters and to determine causes of pollution.

The collection of water sample from different stations

and depths of river was done by Mayer's sampler every week. Three sampling stations were selected in the vicinity of municipal water pumping station to collect the water samples, namely upstream station 'A', municipal water pumping station is station 'B' and down stream to pumping station 'C'. The analysis for temperature, pH, conductivity and dissolved oxygen were performed in the field by using "Portable Water Analysis Kit" manufactured by 'Electronix India, Ajmer', having COMS – LSI technology, with accuracy of ± 2.0 %. The resulstsf were confirmed by the experimental methods time to time, (NEERI, 1986).

Table – 1.1

Variation of different parameters in Wainganga river water, at municipal water pumping station.

SEASON	STATION	TEMP. °C	pH	TDS. (mg/l)	COND. (µmho/cm)	DO. (mg/l)	BOD. (mg/l)
Summer	A	29.66 ± 0.24	7.5 ± 0.05	299 ± 19	430.44 ± 22.24	4.45 ± 0.23	13.86 ± 0.45
	B	30.19 ± 0.48	7.54 ± 0.20	337 ± 11	580.43 ± 17.98	4.3 ± 0.49	40.05 ± 3.47
	C	30.47 ± 0.77	7.64 ± 0.23	417 ± 10	602.77 ± 10.79	3.73 ± 0.59	44.01 ± 2.01
Winter	A	26.93 ± 0.23	7.54 ± 0.12	174 ± 11	330.21 ± 12.37	7.13 ± 0.25	6.3 ± 0.66
	B	27.09 ± 0.35	7.66 ± 0.11	191 ± 6	433.45 ± 12.68	5.93 ± 0.57	25.89 ± 1.47
	C	28.37 ± 0.57	7.7 ± 0.16	213 ± 13	514.98 ± 11.95	5.03 ± 0.34	29.58 ± 2.88
Rains	A	28.09 ± 0.18	7.36 ± 0.12	211 ± 12	315.27 ± 13.68	7.83 ± 0.23	25.97 ± 0.49
	B	28.7 ± 0.19	7.52 ± 0.10	329 ± 16	416.78 ± 16.64	6.27 ± 0.3	28.33 ± 2.45
	C	29.04 ± 0.20	7.57 ± 0.11	337 ± 10	447.07 ± 11.14	5.73 ± 0.55	31.52 ± 3.47