

Physico-chemical aspects of Godavari river at Nanded district MS, India

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ABSTRACT

An attempt has been made to study the Physico-chemical condition of water of Godavari river at Nanded district, M.S. India. The time period of study was July 2016 to June 2017. Three water samples were selected from different sites in each month for study. The parameters studied were Temperature, Turbidity, pH, DO, BOD, COD, Total Dissolved Solids and Suspended Solids. Almost all the parameters were found above the tolerance limit.

Key words: B.O.D., C.O.D., D.O., Effluents, Pollutants, Pollution, TDS, TSS, Turbidity.

INTRODUCTION

Water pollution is one of the most burning problems today. The unwanted substances are being regularly added to our environment, making it unsafe to live. Population growth, rapid economic development, industrialization, and unconscious human activities are slowly transforming our planet into a rotten place. Nanded is one of the most historical and holy place in India, being the place of Huzur Saheb Gurudwara where the 10th Guru of Sikkas Shri Guru Govindsingji was assassinated, thousands of pilgrims visit every year and use to take bath in the holy river Godavari. Their stay in the city causes a severe sewage and garbage disposal problem. The sewage along with the garbage is disposed off either directly or indirectly into the river Godavari through a number of wide drains and results in heavy water pollution.

Furthermore, Nanded is a fast developing city in Maharashtra state. A number of small and large industries are working here, which use very fast, harmful and non-biodegradable chemicals like sulphuric acid, silica powder, hydrochloric acid, detergents including alkyl benzene sulphonate and liner alkyl sulphonate and several dyes containing cyanides, arsenic, cadmium, mercury and lead compounds. Their menacing effects have been manifested in the form of the death of thousands of aquatic organisms.

important feature. Water is important abiotic component of environment. The quantity and quality of water at given time and given space is very significant in relation to the algal life at that location. Many limnological studies were carried out on the reservoirs in Maharashtra. However no such work was carried out on Khanapur Dam in Kolhapur Dist. of Maharashtra. Water from this reservoir is being used by peoples of Khanapur for drinking and irrigation purposes that's why it is necessary to check the quality of water from this Dam.

Study Area

The dam selected for the study is a small earthen dam which is about 4 km away from the Ajara city. The salient features of which are given in Table 1.

METHODOLOGY

The sampling was taken in first week of every month in glass bottles with capacity 300 ml. The physico-chemical parameters of the water were determined on the spots, with the help of 'Portable water detection kit'. The temperature was measured on the spot by using temperature sensitive electrodes of the portable water detection kit. Other physico-chemical parameters from samples were determined in the laboratory. The result were compared with standard permitting parameters.

RESULTS AND DISCUSSION

Temperature

Temperature is one of the most valuable physical factor which regulates the natural processes of the environment. It was recorded in accordance with the seasonal changes. It ranged between 16.4-35.8°C. It was higher in May, June and July and lower during winter months i.e. December and January.

Turbidity

It is the one of the common ways to measure the extent and undecomposed organic matter, sewage and industrial waste. It was very high in July and August because of the 'Janmashtami' and Shraavan Maas' when there is a mass gathering in the city and millions of peoples take bath in Godavari river. It was noted minimum 66 NTU and maximum 130 NTU.

pH

pH shows the acidic or alkaline nature of water, The water of river Godavari was found slightly alkaline. It ranged between 7.3 - 8.6. It showed similar trend to earlier workers.

Dissolved oxygen is essential for the decomposition of chemical waste and dead organic matter. It shows variable trend. It was maximum in winter but lower in summer. It ranged between 1.9 -9.8 mg/l.

Table: Physico-Chemical parameters of river Godavari from July 2016 to June 2017 (Average value of three sites)

Parameters	Units	Rains				Winters				Summers			
		Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Temperature	°C	30.2	29.4	24.8	22.0	00.1	19.5	16.4	21.3	23.2	27.3	34.1	35.8
Turbidity	NTU	126	128	98	115	87	101	66	92	83	78	85	130
pH	---	7.3	7.4	7.5	8.1	8.3	7.8	8.4	7.8	7.6	8.4	8.6	7.7
DO	Mg/lit	2.1	2.2	4.2	6.5	3.1	9.3	8.2	4.5	9.8	6.7	2.7	1.9
BOD	Mg/lit	37.3	33.8	8.1	8.5	19.1	6.2	6.1	18.6	12.7	21.9	42.1	43.0
COD	Mg/lit	43.4	24.5	14.7	18.8	30.9	18.2	12.5	32.2	18.3	56.1	13.9	57.8
TDS	Mg/lit	602	473	501	511	622	542	430	523	658	595	601	668
TSS	Mg/lit	425	396	433	435	457	503	352	460	433	434	506	501

BOD

BOD is the amount of oxygen required by living aquatic organisms for their physiological process. It was found very high in summer and comparatively low in winter. It ranged between 6.1- 43.0 mg/l. The findings were similar.

COD

It is the amount of oxygen required for the decomposition of chemical waste. A high value of COD shows a higher accumulation of organic waste in the pond. It was found higher during summer 57.8 mg/l and lower during winter 12.5 mg/l. Which was in accordance with the observations.

TDS

Total dissolved solids also serve as indicator of pollution. Trend was found to be highly fluctuating. It ranged between 430-468 mg/l.

TSS

Total suspended solids were found very fluctuating. TSS were higher in summer and lower in winter and ranged between 352-506 mg/l. The findings were similar.

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