

Zoology

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Review Article

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Water Quality Assessment of Godavari River at Balaji Temple Gangapur, Nashik

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ABSTRACT

Godavari River at Balaji Temple Gangapur, Nashik was observed by considering the physicochemical parameters as color, odor, temperature, light penetration, total solids, electrical conductivity, pH., total alkalinity, total hardness, chloride content, sulphate content, calcium content and dissolved oxygen. Water can be polluted when variation is observed in its physicochemical parameters. So an attempt was made to evaluate water quality in relation to aquatic flora and fauna and to understand present pollution Status.

Keywords: alkalinity, total hardness, chloride content, sulphate content, calcium content and dissolved oxygen

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1. Introduction

Water is one of the most important commodities which man has exploited than any other resource for sustenance of his life. Most of our demand for water is fulfilled by rain water, which gets deposited in surface and ground water resources. Water quality is the physical, chemical and biological characteristic of water. Water can be regarded polluted when variation is observed in its physicochemical properties so as to become less suitable for drinking, domestic, agriculture, industrial, relational wild life and International Journal of Chemistry and Pharmaceutical Sciences

other uses. The physicochemical properties will also help in the identification of source of pollution, for conducting further investigations on the eco- biological impacts and also for initiating necessary steps for remedial actions in case of polluted water bodies. A river is natural water course, usually freshwater, flowing towards an ocean, a lake, a sea or another river. Heavy pollution is observed in rivers which flow or pass through cities, industrial areas, power plants etc. the suspended and precipitated substances

and organic substances in water are capable of adhering pollutant particles. The sediments, both suspended and precipitated stored on the water bottom, form a reservoir for many pollutants and trace substances of low solubility and degree of degradability.

2. Methodology

I. Collection site and Sampling:

For the present study, water sample was collected from site of river namely Balaji Temple Gangapur, Nashik. The sample was carefully transferred to the bottle and brought to the laboratory without disturbance in the period of Jan., Feb and March, 2015. Samples was collected 09:00 am to 10:00 am to analyze the physicochemical parameters from stations. The samples were collected during morning hours.

II. Laboratory analysis:

Water samples were brought to the Laboratory and analysis was carried out by following the standard physicochemical methods (APHA, 1985, Trivedi et.al; 1987). For chemical detection the physicochemical parameters such as color, odor, temperature, light penetration, total solid, electrical conductivity, and ph. total acidity, total alkanity, total hardness, chloride content. Sulphate content, calcium content, dissolved oxygen, BOD; COD were analyzed by respective standard procedures.

Table 1

Parameters	Values
Color	Colorless
Odor	Odorless
Temperature	21 ⁰ C
Light penetration	39 Cm
Total solids	20 mg/L
Electric conductivity	179 mho/cm
pH	7.70
Total alkalinity	115 mg/L
Total hardness	242 mg/L
Chloride content	38.34 mg/L
Sulphate content	164.04 mg/L
Calcium content	24.04 mg/L
Dissolved oxygen	9 mg/L

3. Results and Discussion

Water quality varies from time to time and place to place due to influence of regional factors. After analyzing the data, we have an idea about the hydrological parameters. The numerical data of water quality of Godavari River were presented in the table no.1. In the study physicochemical parameters observed were as follows:

Color:

As we know that the water is colorless and at the study area water also found colorless.

Odor: In this study when water sample analyzed for odor, it was odorless. But sometimes we found musty odor in some water bodies. This musty odor of water shows increased disposal of untreated as well as treated sewage and other pollution in water. These odors may be caused by living and decaying aquatic organisms and accumulation of gases like ammonia, hydrogen sulphide, etc.

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Temperature:

Temperature at site is about 21⁰ C. Temperature is known to influence the pH, alkalinity and DO concentration in the water.

Light Penetrance:

Light penetrance was 39 cm. In some sites of river we found more dissolved soil particles in water. a lot of soil, organic matter, cremation activity residue etc. are introduced in water flow thus light penetrance decreases.

Total Solids:

Total solids values during study was observed 20 mg/L. Disposal of organic wastes as well as industrial wastes result in the increase in the amount of suspended as well as dissolved material in river water.

Electric Conductivity:

Electric Conductivity values were observed 179 Mho that is in normal range. But as increase in Electric conductivity values shows that degree of pollution and the concentration of various ionic species. Increase in ionic species promotes conductivity mainly due to sewage and industrial drains introduced in water flow.

pH:

The pH factor is a measure of the acidity or alkalinity (basic) of water. The usual pH range of water is from 0 to 14. A pH value of 7.70 indicates a neutral solution, meaning water is neither acidic nor basic. Values below 7 and approaching 0 indicate a more acidic solution, while values above 7 to 14 indicate a more alkaline solution. Here a pH value 7.70 at station was observed. This may due to more exposure to air, biological activities, and received pollutants like sewage, industrial wastes, and detergents, dumping of flowers, garbage, holy wastes and cremation ash.

Total Alkalinity:

Total alkalinity values was 115 mg.L . Alkalinity value is more when temperature was lower this may due to ample amount of carbonates and bicarbonates.

Total Hardness:

During the study Total Hardness was observed 242 mg/L. As this value is high due to bicarbonates associated mainly with calcium and magnesium and in some mean also related with organic productivity.

Chloride:

Chloride content at site was 38.34 mg/L. In this case increase in chloride content was found as compare to chloride content found in river water. Excess of chloride content in water usually taken as index of pollution. The Sewage water and industrial effluents are rich in chloride and hence the discharge of these wastes results in high chloride level in freshwater.

Sulphate:

Sulphate content value was 164.04 mg/L. These high value of sulphate is due to pollutant introduce in river water through city sewage, industrial drainage, agrochemical pollution excessive use of fertilizer and pesticides etc. in fields nearby river bank .

Calcium: Calcium content at site was 24.04 mg/L. Calcium is an important component. Calcium values above 24 mg/L was classified as calcium rich and Study area shows high calcium concentration.

Dissolved Oxygen:

Dissolved oxygen is measure of amount of O₂ freely available in the water and our investigation we found that DO content of water was showed average range of O₂ content in it i.e. 9 mg/L. An inverse relationship of DO and with temperature and free CO₂ is already on record in the water bodies (Welch, 1952; Wetzel, 2000)

4. Conclusion

In water quality assessment of Godavari River at Balaji Temple Gangapur Nasik following physicochemical parameters were observed. The present study shows deviation from standard reading. Hence prevention should be done in order to avoid over exploitation of water body. Invertebrate and vertebrate fauna biodiversity study in it is a progress.

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