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Research Article

The Studies of Water Quality in Godavari River and Parameters of Mahadevpur Lakes in Jayashankar Bhupalpally District, TS

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ABSTRACT

Water quality is the major factor controlling the healthy diseased states in the both humans and animals surface water quality an essential component of the natural environment and a matter of serious concern today, water quality for different uses according to its physical chemical, biological and organoleptic (Taste - related) properties, water quality as it directly impacts human consumption and health. The assessment of water quality has been made with the help of both Physiochemical and biological parameters for this study surface water samples and algal samples was collected at monthly intervals Godavari River (Triveni sanghamam) at Kaleshwaram. The various physiochemical parameters were analyzed by following standard procedures. The algae were estimated quantitatively and qualitatively, River water is alkaline, chlorides, total hardness, Phosphates, COD, BOD, organic matter was present in concentration where as dissolved oxygen was recorded in high concentration. In is river about 130 species belonging to *Chlorophyceae, Cyanophyceae* and *Bacillariophyceae* was recorded and identified *Synedratabulata, Amphora ovalis, Achnanthes microcephala, Rhopdodia gibba,* were dominant in the river. The water quality parameters like PH, Electric Conductivity, Dissolved oxygen, Total Sulphates, Total dissolved solids (TDS), Total suspended solides (TSS), BOD, COD and Heavy metals like Zink, Lead and Iron were analyzed for both the lakes for the period of August-2021 to December-2021. The lake water is not suitable for drinking and irrigation and fishery development.

1. Introduction

Water is the second most important need for life to exist after, air water quality is it is the physical, chemical and biological characteristics of water. The most common standards used to monitor and assess water quality convey the health of ecosystem. Water as a natural resource is becoming a scarce commodity due to its indiscriminate use and contamination from various sources such as leaching of agro-chemicals from farms, untreated domestic water from cities and increasing volume. Godavari is the second longest river in India after the river Ganges is also referred "Dakshin Ganga or Ganga of South". After every 12 years millions of devotees are organized at Telangana state in Kaleshwaram (Triveni Sanghamam) major bathimg festival called as 'Pushkaralu" (Kuambamela) is held on the bank of the Godavari river.

The objectives are to investigate the water quality of Godavari river at Kaleshwaram, Mahadevpur mandal, Telangana state, and to identify parameters of the selected lake in Mahadevpur (locally known as Red Lake).

2. Materials and Methods

2.1 Study Area

The Godavari Rivers runs from western to Southern India and is considered to be one of the big river basins in India with length of 1465 KM (Figure-1 & 2). It is the second longest rivers in India. The study has covered about 18km length of the river starting from Mahadevpur mandal almost 12 important river water sampling collecting from Godavari river.

Water samples were collected as per standards methods of sampling techniques as described in APHA (2012). Analysis of the water samples were done as per standard methods of water. Waste water examination various physic- chemical parameters such as Temperatures, PH, electrical conductivity (EC), Alkanity, Total Hardness (TH), Total Dissolved solids (TDS), Total suspended solids (TSS), Total solids (TS), Dissolved oxygen (DO), Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Phosphates, Turbidity, PH was determined on the spot using PH and do of the sample was fixes

on site using Managanous Sulphate , Alkali azide solution. DO was than determined using Winkler's method hardness was estimated using EDTA Spectro photo meter.

Figure-1. Location of Study Area

Figure-2. River water sampling location

2.2 Biological Parameters

Bacteria, algae, viruses, and protozoa are the biological parameters being investigated in the water samples.

Table-1 NSFWQI Water quality Factors and Weights

S.No:	Parameter	Weight
1	Dissolved oxygen	0.15
2	Faecal coli form	0.12
3	PH	0.9
4	BOD	0.11
5	Temperature change	0.1
6	Total phosphates	0.13
7	Nitrates	0.8
8	Turbidity	0.08
9	Total solids	0.07

Algae was avider group of bacteria and plants in argotic ecosystem are important components of biological monitoring programs for evaluating water quality. They are suited to water quality assessment because of their nutrient needs rapid reproduction rate and very short life cycle. Algae are valuable indicates of ecosystem conditions because their respond quickly both in spices composition densities to wide range of water conditions due to changes in water chemistry.

Ecological and chemical public health perspective abundance of nutrients containing nitrogen and phosphorous that flow into lakes and rivers. Source of the inorganic components that contains those elements include household laundry detergents, commercial fertilizers used for lawns, agriculture and along with organic pollution from sewage related sources.

Lakes and rivers that receive this source of pollution periodically, display high density of algae growth resulting in blooms of toxin producing genera. In lakes and rivers at late summer cyanobacteria surface blooms that occur when the water is thermally sterilized, sunlight is intensity is high there is a period at mild weather of the N:P ratio is low.

3. Results and Discussions

Godavari river water quality observed at the 12 sampling station is choosing for different areas within the 100 meters distance and the analysis results have been shown for August to December 2021. Water quality at selected stations was determined using national sanitization water quality index (NSFWQI), which is the most widely used water quality index throughout the world (Table-1). To calculate NSFWQI value 9 parameters namely dissolved oxygen (DO), Facial coli form, PH, Biochemical oxygen demand, Temperature change, Total phosphate, Nitrate, Turbidity and Total solids are used. For each of these 9 parameters standard charts are available from these Table-2. Q value of each parameter used to determine the NSFWQI value at the selected areas in 100 meters distance.

Table-2. Total solids

Total solids	Total coli form (mpn index *100 ml*10^4)	NSWQI
4.2	9.99	82
5.5	8.3	77
4..61	26	76
9.98	28	42
15.57	23	40
12.11	44	38
13.58	21	35
1.14	35	32
29.36	44	26
23.14	55	30
0.17	78	29

Table-3 NSF Water Quality Index Table.

S.No	NSFWQI Range	Water Quality
1	90-100	Excellent
2	70-90	Good
3	50-70	Medium
4	25-50	Bad
5	0-25	Very Bad

In the month of January and March 2021 it was observed that BOD at Mahadevpur became 37 and 41 mg/L due to discharge of sewage, Eutrophication phenomenon takes place in the water body, if the water body is rich in nitrate phosphate content. Nitrate and Phosphate content of water body usually increases, if the agricultural runoff or sewage is entering to the water body. Fecal coli form presence shows the indication of contamination water due to human or animal feces (Table-3).

4. Conclusion

The assessment of water quality of 18 km of Godavari river from Mahadevpur Mandal There is appreciable change in water quality from good to bad distance from 100 meters. In the entire river stretch de-oxy generation process predominant over Re-oxy generation, so river does not get the chance to recuperate via self purification process. Therefore zones of recovery where not observed and should take efforts to direst the remaining down poring near water of Godavari. Physio-chemical and biological analysis indicated that Godavari river water does not meet the norms to be potable water confirming long range impact of pollution on health and ecosystem therefore river water should be subjected to suitable chemical and biological treatment before it can be used for drinking water

Conflicting Interests

The authors have declared that no conflicting interests exist.

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