



“WATER POLLUTION POLICY AND ADMINISTRATION” WITH REFERENCE TO GODAVARI RIVER

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ABSTRACT :

River water is support for agriculture, household, industries and shipping. India is having major rivers like Ganga, Kaveri, Gomati, Godavari etc. The river Godavari is of importance in the Marathwada region. In the present work attempt has been made to assess the quality of Godavari river water flowing through Marathwada. Seven sampling stations namely, Jayakwadi dam, Paithan , Rashasbhuvan, Shahagad, Vishnupuri dam, Nava pool and Govardhan ghat were selected as per the discussion with pollution control board. The values of parameters pH, chloride, alkalinity, total hardness, calcium, BOD and COD were determined at these stations. The analysis served as important tool for knowing quality of Godavari river.

KEYWORDS : *agriculture, household, industries and shipping.*

INTRODUCTION

Rivers act as major resource of water. River water is used for irrigation, shipping and industries. The country of India is rich with monsoon fed and perennial rivers. These rivers have shaped the economy in many ways. Some examples of Indian rivers are ganga, kaveri, gomati, Godavari etc. Godavari River is one of the largest rivers of India. It stands second in rank after the Ganges. The river originating from Nashik in the state of Maharashtra flows through Telangana, Andhra Pradesh, Chhattisgarh, Madhya Pradesh, Odisha, Karnataka and Puducherry. The river has played a major role in cultural and social growth of the regions in its path. In Maharashtra, the river flows and enters cities Nashik, Ahmednagar, Aurangabad. The river has attracted attention of many researchers due to its vast area and rich diversity.

However due to intervention of man in the nature, cases of pollution have become a common sight. River along its path of flow dissolves many substances in it. The river water gets polluted by run-off from agriculture, washings, sewage and industrial effluent. The quality and purity of river water is of importance as many lives are dependent on river water for their existence. The composition of polluted water is quite different than freshwater.

The freshwater sources are limited in nature. Hence it is required to preserve the purity of such sources. It is essential to know the quality of water and its effect on the environment. Hence there is need to carry out study covering scientific, social and economical aspects of river water pollution. Then and then only it would be possible to solve the problem of river water pollution.

The goals of present work are:

To analyze the quality of Godavari river water in Marathwada region

To study the social aspects of river water pollution

To suggest measures to solve the problem

Various researchers have worked on the quality of water in Godavari. The studies include topics like physio-chemical and environmental factors of pollution.

The increasing population, insufficient sanitary facilities, pollution of the rivers etc. are characteristic problems of developing cities. [1]

On the banks of river Godavari, people take holy dip. The Godavari is thus of religious importance. [2] Jaikwadi Dam is a man made reservoir constructed in 1975 to overcome the water scarcity problem caused due to draught in the region. The area is chosen for study and was visited quarterly. For all the three seasons soil and water samples were collected. Various parameters color, odor, temperature, pH, conductivity, hardness, DO, BOD, COD, Alkalinity, Chloride, Sulphate, Nitrate and phosphate were determined. [3] An ecological balance is seen to be maintained in most of dam reservoirs. However, most reservoirs are polluted due to activities like immersion of idols, washing of clothes etc. Such activities deteriorate quality of water. [4] In a research work, the quality of Godavari river water was analyzed in terms of heavy metal. For the study eleven sampling stations were chosen and samples were withdrawn for three different seasons. The presence of heavy metal like Iron, copper, chromium, lead, cadmium and zinc is indicated by the analysis. This puts challenge for scientists, environmentalist and administrators as pollution of river will have impact on the food chain. [5] A group of researcher worked on the changes in physio-chemical properties of Godavari river in 2016. The experiments were carried out in pre-monsoon and post – monsoon. Water samples were collected from nine sites and analyzed for pH, temperature, conductivity, dissolved solids, Dissolved oxygen, biological oxygen demand and chemical oxygen demand. It was found that abundant zooplanktons were observed in summer. [6] A study was carried out on hanapur Dam in Kolhapur, Maharashtra to assess the quality of water. The parameters temperature, pH, COD, BOD, TSS and TDS were analysed. [7] The quality of Godavari river water was assessed for a 65 km stretch of river from its origin in Kushawart. The results were expressed in terms of National Sanitation Foundation Water Quality Index (NSFWQI) indicate there is heavy pollution of river. [8] A study covering 200 respondents in the area of Shikarghat, bhokar and Nanded was undertaken. The relationship between quality of river water and literacy was analyzed. Role of age and literacy in occurrence of water borne diseases is determined. [9] Water Quality Index is a kind of average obtained by relating group of variables to a scale and combining them into a single number. [10] In a study carried out for evaluating quality of Godavari river water of Rajahmundry and Dowlaiswaram water quality monitoring stations in Andhra Pradesh state, India, water quality index was calculated. A time series model was adopted and seasonal variations in the quality of water were reported. Eight important parameters were determined for the calculation of water quality index viz., pH, Dissolved Oxygen, Electrical Conductivity, Total Dissolved Solids, Total Alkalinity, Total Hardness, Calcium and Magnesium. The authors conclude that water quality index is versatile tool for assessing the quality of river water. [11] In a research work water quality index is used as important tool for classifying pollution levels of Godavari River. GIS was used for visualizing the quality of water. Faecal coliform, Total coliform, ammoniacal nitrogen, DO, pH were considered as important parameters. [12] To study the effect of discharge on the growth of zooplankton, study was carried out for a period of 15 months from September 2007 to November 2008 in the Godavari estuary, India. The study covered wet and dry seasons. It was observed that there exists a relationship between discharge and growth of these planktons. Authors state that in the case of moderate discharge high primary production was observed. [13] At Asarjan located in Nanded district, a lift irrigation project was constructed on the river Godavari. The project was constructed for purpose of irrigation and water supply in 1988. An attempt was made to study the species occurring in this backwater region of the project. It was found that species such as rotifers, copepods, ostracods, cladocerans etc are occurring in the water. The species are of importance because they are part of food chain. They are good indicators of water quality and changes in it. [14] To study the suitability of ground water a study was carried out in western delta region of Godavari in Andhra Pradesh. The region has flood plain zone, buried channel zone and clay zone. The results show that quality of ground water is hard and very alkaline. [15] Water quality indices are one of the important tool used for assessment of water. However it is necessary to

develop a method specific to the system considered. [16] Disposal of wastes lead to pollution on the banks of river. The aquatic life is disturbed due to these toxins. In a study water quality at Ramkund was analysed from a period of June to October 2012. The results showed that The analysis of the water quality parameters of River Godavari water from three (03) different stations in Nasik city shows that the pH, Chloride ion, Total Hardness, Calcium values are not within the permissible limits.[17] The water quality is strongly affected by presence of impurities like heavy metals, Fluoride,POP, arsenic etc. Due to water contamination population at large is exposed to the risk of drinking contaminated water. Hence there is need for water quality studies.[18]

In India several acts were made before and after independence for environment protection. Before independence, The forest policy of 1894, The shore nuisance act, Oriental gas company act 1857, The north India canal and drainage act, The Indian fisheries act 1897 and Indian forest act are the acts which proved to be important for environment protection. [19-24]

After independence many improvements were made in the existing policies to protect the environment. The constitution of India, in its articles: 14, 19, 21, 24, 26. 31, 32 and 226 addresses the environmental issues. The national committee for environment planning and commission was especially dedicated for well being of nature. Tiwari committee on environment was also prepared to improve the state of environment. The other acts like river boards act, wildlife protection act, water act, environment protection act prove to be helpful in protecting the ecosystem. [25-31]

MATERIAL AND METHOD

Seven sampling stations were chosen for the study. The sampling locations were selected in consultation with Maharashtra state pollution control board. The sampling stations were Jayakwadi dam, Paithan , Rashasbhuvan, Shahagad, Vishnupuri dam, Nava pool and Gopvardhan ghat. As it is clear from the literature that pH, chloride, alkalinity, total hardness, calcium, BOD and COD are the important parameters for determining the health of water reservoir. Hence these parameters were determined. Table 1 shows the estimation of these parameters.

Table 1

Sr. No	Monitoring station	pH	Chloride	Alkalinity	Total hardness	Calcium	BOD	COD	Unit
1	Jayakwadi Dam, Paithan	7.8	67	103	175	31	8.6	49	mg/l
2	Paithan	7.45	226	402	272	89	9.48	49.47	mg/l
3	Rakshasbhuvan	7.7	52	148	156	35	4.8	22	mg/l
4	Shahagad	7.7	52	108	140	22	5.2	36	mg/l
5	Vishnupuri Dam	7.8	68	104	172	32	9.0	52	mg/l
6	Nava pool Nanded	8.0	70	204	220	45	25	106	mg/l
7	Gowardhan Ghat Nanded	7.3	120	260	280	63	115	448	mg/l

RESULT AND DISCUSSION

The parameters indicate the level of pollution. All the parameters are chosen by reviewing the literature. Conclusions are drawn from the values of parameters. Table 1 shows values of the various parameters. From the table it is clear that, maximum pH was seen at 8.0 at Nava Pool Nanded and minimum value of pH was seen at Gowardhan Ghat Nanded. In eneral it is said that rivers having pH below 5 are at

risk. It is also concluded that the variation in pH is due to industrial and domestic waste entry into the river. Chloride is another important parameter of interest. The natural fresh waters contain very less amount of chloride. In present study the concentration of chloride was found to be 226 mg/l at Paithan and 2 mg/l at Rakshasbhuvan and Shahgad of Jalna district. Alkalinity measurement shows 402 and 103 at Paithan and Jayakwadi dam respectively. The cause of alkalinity is minerals dissolving from soil. Hardness value at different sampling points is well within the limit prescribed by WHO. Calcium values indicate water is contaminated. BOD and COD values are minimum. However the variation in values is due to mixing of waste water and river water. Thus the characterization of water helped to understand the level of pollution.

CONCLUSION

River water quality greatly affects the well being of the people and environment. In Marathwada region, there is occurrence of draught. So the region struggles with the problem of availability of water. It is very important to assess the quality of river. The study was taken with an objective to characterize the water quality of Godavari river with reference to Marathwada region. From the seven sampling sites different values are obtained for pH, Chloride, Total hardness, Calcium, BOD and COD. From the values it can be concluded that, efforts must be taken to improve state of river. During the interview with the respondents, it is marked that the water quality is badly affected during gatherings, visits, drainage of waste water into river. Such issues need to be resolved. The region where there is minimum mixing of river water and waste water COD values are recorded quite low. The river water quality study proved to be informative. It is concluded that the river receives the pollutants from agricultural run-off, domestic activities and unsustainable development. In order to protect the river water planning must be done to minimize such practices.

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