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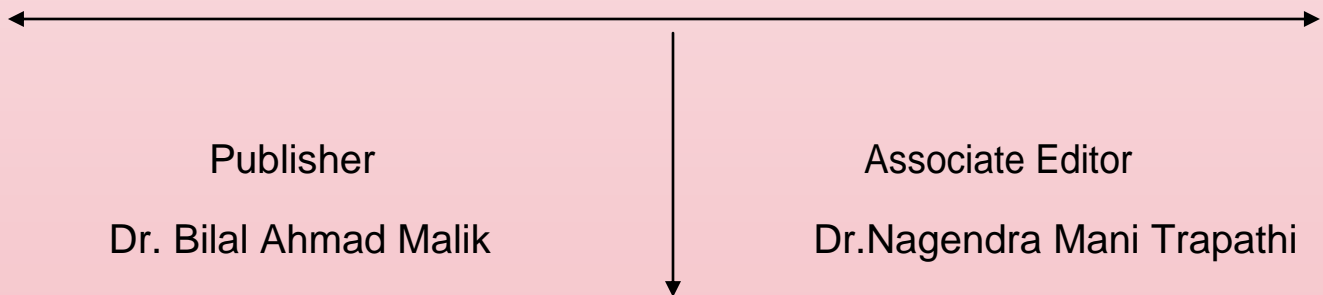
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GANESH IDOL IMMERSION: A HOLY FAITH OR ENVIRONMENTAL DETERIORATION

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ABSTRACT

The impact of Ganpati Idol immersion on lake water is discussed in present study. For the study purpose Mehrun Lake of Jalgaon City was selected as sampling station because large number of Ganesh idols immersed in this Lake. Water sample were collected before Ganpati festival and after Ganesh visarjan (at 11th day). The collected samples were analyzed for various physico-chemical and biological parameters. According to analysis the change was observed in all physico-chemical parameters like pH, EC, Turbidity, Total Suspended Solid, Total Dissolved Solid, Total Hardness, Ca & Mg Hardness, Calcium, Magnesium, Oil and Grease, Sulphate, Phosphate, DO, BOD, COD etc. On the basis of these observations it is concluded that the level of water contamination & pollution increases in Mehrun Lake due to these religious Festival and may be cause adverse effect on the aquatic flora and fauna of the lake. So it is important to aware we all, our society and pay our kind attention to reduce such water pollution which is related to our religion.

Keywords: *Idol immersion, physico-chemical, water contamination, aquatic flora and fauna.*

INTRODUCTION

Water pollution is a major global problem which affects the biological system of the environment. Water gets polluted due different type of domestic, commercial, agricultural and industrial activities. Besides these, the major activity, which is responsible for creating the water contamination and water pollution, is our some cultural activity like Ganesh Utsav. Among all the Indian festivals Ganesh Utsav is celebrated by every community with great enthusiasm. These festivals end by idol immersion in water. These idols are made up of degradable and non-degradable components and paints containing heavy metals due to that immersion activity deteriorates water quality.

The present research work focus on degradation of water quality of Mehrun Lake due to the immersion activity of Ganesh idols in it. Mehrun Lake is only one lake in Jalgaon city having some tourist view points. The people of

Jalgaon city are always excited for celebration of Ganesh Utsav, which is one of the important festival of them. This festival is celebrating personally as well as socially. In this festival number of Ganesh idols in different sizes are immersed in Mehrun Lake after worship of 10 days. When the idols are immersed, their colors, chemicals and other components that are used for idol preparation get dissolved and lead to significant changes in the water quality (Dhote et al, 2001).

LITERATURE REVIEW

N.C. Ujjania and Azhar A. Multani (2011) discussed the impact of Ganesh idol immersion on water quality of Tapi River, Surat, Gujrat. They collected the water sample from Ashwanikumar immersion point (Ovara) of the Tapi River. They evaluate the changes in physico-chemical properties of Tapi River and conclude that the level of water pollution increases in Tapi River due to Ganesh idol immersion religious activities and causes adverse effect on the aquatic ecosystem. **Rupinder Kaur (2012)** conducted a study on Marine & fresh water bodied regarding the effect of idol immersion. They carried out sampling from Shivaji Park, Mumbai and Masunda Lake, Thane were selected for taking marine water sample and fresh water sample respectively. They conclude that pH declined slightly during immersion period whereas DO showed only slight variations in the pre-immersion, immersion and post-immersion samples. They also observed that the values of chemical parameters the values of these parameters significantly increased during the immersion period and then declined in the post-immersion period.

OBJECTIVES OF THE RESEARCH WORK

- To evaluate the physico-chemical characteristics of water samples collected from Mehrun Lake during pre & post immersion of Ganesh idols.
- To know the optimum pollution load on Mehrun Lake due to Idol immersion.
- To create awareness in society regarding the ill effects of immersion in the holy water bodies through mass awareness programmes.

STUDY AREA

Four sampling points of “Mehrun Lake” were selected for present study as the number of Ganesh idols in different size are immersed in this lake during Ganesh festival and immersion period. The situation of the lake

before the immersion and after immersion is shown by Image 1 & 2 while the study location (Mehrun Lake) is shown by Google map by Image 3.



Image 1, 2 and 3: Actual situation at Mehrun Lake before and after immersion and Google image of Mehrun Lake

MATERIAL & METHODOLOGY

The Water samples were collected in well rinsed and pre-cleaned plastic canes from four sampling points of Mehrun Lake during Pre-immersion and post-immersion periods of idols by composite sampling method. The collected samples were analyzed for various physico-chemical water quality parameters viz. Temperature, pH, Total Hardness, Ca Hardness, Mg Hardness, Calcium, Magnesium, Total dissolved solid, Total suspended solid, Total solid, DO, BOD, COD and Oil & Grease. The measurement of temperature and fixation of dissolved oxygen was completed in situ and physico-chemical analyses were carried out at research laboratory by using standard method of APHA (2005). The average values of all samples were taken in to consideration.

RESULT & DISCUSSION

The Physico-chemical parameters were analyzed is tabulated in Table No. 1 below:

Temperature: Water temperature is important factor as the view point of aquatic flora and fauna. The temperature increase from pre to post immersion by 3⁰C. This rise in temperature during study period was observed due to increasing the chemical as well as biological reaction in water which reduces the solubility of gases.

pH: pH is an important parameter in water body since most of the aquatic organisms are adapted to an average pH and do not withstand abrupt changes. After post immersion the pH was increase slightly. The observed values show that the water was alkaline through the study period.

Turbidity: The measurement of turbidity is a key test of water quality. Turbidity is the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eyes. The turbidity measurement gives the rough idea about addition of organic substances and materials used in preparation of Ganesh idols. The observed average values of turbidity increase from 8.0 to 14.5 NTU. The post values were higher as compare to pre immersion values. It shows the increasing in particles quantity in the water body after idol immersion.

Sr. No.	Parameters	Pre-immersion	Post-immersion
1	Temperature ($^{\circ}$ C)	33.7	36.4
2	pH	8.33	8.37
3	Turbidity (NTU)	8.0	14.5
4	Total Hardness (mg/L)	195	537.5
5	Ca Hardness (mg/L)	128.63	427.88
6	Mg Hardness (mg/L)	37.13	138.75
7	Ca ²⁺ (mg/L)	55.71	171.36
8	Mg ²⁺ (mg/L)	9.02	33.73
9	Total Dissolved Solids (mg/L)	866.55	1917.95
10	Total Suspended Solids (mg/L)	417.20	820.28
11	Total Solids (mg/L)	1283.75	2738.22
12	Dissolved Oxygen (mg/L)	2.38	3.26
13	BOD (mg/L)	28.41	46.11
14	COD (mg/L)	23.75	53.75
15	Oil & Grease (mg/L)	0.28	0.46

Table 1: Change in Physico-chemical parameters of Mehrun Lake during pre and post impression of Ganesh idol

Total Hardness: The hardness of water is not a pollution parameter but indicates water quality. Absolutely soft water is tasteless whereas hardness above 600 mg/lit can be affecting the human cardiovascular & excretory system It cause the kidney & bladder strong. Hardness is the property of water which prevents the lather formation with soap & increases the boiling points of water. The present research work shows significant increase

in Total Hardness in post – immersion sampling than pre-immersion period. The TH was increase from 195 to 537.5 (mg/L) from pre immersion to post immersion.

Ca and Mg Hardness: Calcium and Magnesium are common constituents of natural water and important contributor to the hardness of water. The natural source of Ca and Mg is the rocks from which it is leached. Being important contributors of hardness, it reduces the utility of water for domestic use. A significant increase was observed in Calcium hardness and Magnesium hardness at study area. Average concentrations of Ca hardness and Mg hardness were 128.63 mg/L and 37.13 mg/L during pre-immersion while it was increase to 427.88 mg/L and 138.75 mg/L at post immersion period.

Ca²⁺ and Mg²⁺: The Calcium and Magnesium content increase during post immersion period. The average concentration of Ca²⁺ in pre and post immersion sample was 55.71 and 171.36 mg/L respectively, while the concentration of 9.02 and 33.73 mg/L in pre and post immersion sample was respectively. It shows the ionic concentration of calcium and magnesium was increase after idol immersion.

Total Dissolved Solids and Total Suspended Solids (TDS & TSS): Solids refer to matter suspended or dissolved in water. Solids may affect water quality adversely in a number of ways. Water with high dissolved solids generally is of inferior palatability. TDS and TSS include different salts and organic materials which readily dissolve in water and often impart a degree of hardness. In the present research work, the concentration of dissolved solids was increases rapidly in post immersion samples. The average concentration of TDS at the time of pre immersion period was 866.55 mg/L, which was increase during post immersion period i.e. 1917.95 mg/L. Simultaneously, the average concentration of TSS was increased from pre immersion (417.20 mg/L) to post immersion period (820.93 mg/L).

Dissolved Oxygen, BOD and COD: DO is the important factor of water quality, which related to biotic community present in water body. It may influence the biota of particular water body. The dissolved oxygen play important role in survival of aquatic organisms. The requirement of oxygen by the microorganism present in water body to degrade the organic matter in water body is Biochemical Oxygen demand. The organic matter present in the water get degrade by chemically is Chemical Oxygen Demand. In the present study, there was resultant change observed in DO, BOD and COD. The higher values of BOD have direct correlation with the increase of nutrient level in the water body due to the immersion activity (McCoy et al, 1986). COD was increase due to the chemical colors was used for the idol painting. The DO was increase from 2.38 to 3.26 mg/L, BOD was

increase from 28.41 to 46.11 mg/L and COD was increase from 23.75 to 53.75 mg/L during the pre and post immersion.

Oil & Grease: Excess quantity of Oil and grease may be interfering the biological (aerobic and anaerobic) process which gives resultant change in aquatic ecosystem. The excess concentration of oil and grease spared on the top of the water body, due to which sun rays are not able to reach at the bottom of water body which further affect the photosynthesis process of aquatic flora. In present study the concentration of oil and grease slightly increase in post immersion samples from 0.28 to 0.46 mg/L due to oil paints for painting the idols and oil offering by the devotees during worship.

CONCLUSIONS

Mythological point of view, the water bodies are related religious sentiments but scientifically these are not suitable for human uses. The present study shows negative effect on physico-chemical parameters of Mehrun Lake water due to idol immersion activity. The water quality parameters like pH, Turbidity, TDS, TSS, TS, TH, Ca Hardness, Mg Hardness, Calcium, Magnesium, DO, BOD, COD, Oil & Grease, were increased significantly in post immersion water samples. The current research indicates that the Mehrun Lake was polluted due to Ganesh idol immersion because the plaster of paris, clothes, iron rods, chemical colors, varnish and paints used for making the idols deteriorate water quality of Mehrun Lake. It is worrisome because due to deterioration of potable water, this water resource is harmful for domestic and drinking purpose.

REMEDIAL MEASURES

- Use of a permanent icons made of stones and brass, used every year.
- Immersing the idols in a water tank or in a bucket of water at home.
- Avoid the use of different decorative material (Thermocol sheets, polythene bags, etc.)
- Selective plantation may do at the immersion site because some has an ability to absorb heavy metals.
- Public should be educated on ill effects of immersion in the holy water bodies through mass awareness programmes.

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