



Impact of Idol Immersion on Water Quality of Kolar River in Saoner, Dist. Nagpur, India

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Abstract

India is the country of rich cultural heritage and festivals. Peoples here celebrate festivals with great enthusiasm. Among all the Indian festivals Ganesh Utsav and Durga Puja is celebrated by every community. 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 study has been made to analyze the physicochemical parameters of the river Kolar after idol immersion from two stations for analyzing the various physicochemical parameters such as Temperature, pH, TDS, DO, Phosphate, Nitrate, BOD, COD, Oil and Grease, etc. The work highlights the condition of this river water after idol immersion with respect to the parameters mentioned above.

Keywords: Idol, immersion, Kolar, physic-chemical, Saoner.

Introduction

India is a multi-cultural country of myriad festivals. Some of these festivals involve 'idol immersion' in water as celebrations finale. Ganesh festival is one of the prominent festivals celebrated by all communities irrespective of their cast creed and religion. Beautifully carved and decorated idols are drowned into water bodies like rivers, ponds and lakes with prayers for success, happiness and peace. Two major festivals in India that involve idol immersion are 'Ganesh Chaturthi', dedicated to Lord Ganesh and 'Durga Puja' dedicated to Goddess Durga.

However, amidst the celebrations, people tend to forget the ill-effects of the practice. The most serious impact of idol immersion is on the environment. It disturbs the ecological balance by polluting water and adversely affecting the flora and fauna. The requirement of water is in all lives, i.e. from micro-organisms to man, is a serious problem today because all water resources have been reached to a point of crisis due to unplanned urbanization and industrialization¹. The idols of deities are made of non-biodegradable materials such as plastic, cement and plaster of paris and are painted with toxic dyes that contain harmful and toxic chemicals². When they come in contact with water, it becomes poison. All forms of life depend upon water and it provides sustenance to plants, animals, aquatic organisms and to meet the human need like agriculture and industries³. Water gets polluted by dumping domestic, industrial and hospital waste and domestic activities like washing, bathing and religious rituals^{4,5}. Thousands of Ganesh and Durga idols of various sizes reaching heights up to 20 to 40 feet are immersed every year in different water bodies⁶.

Material and Methods

For this study, two sampling stations have been selected along the stretch of river in the vicinity of Saoner town. Station 1 was near Shiv Temple, Pahlepar and station 2 was near Borujwada, Saoner. Samples were collected and preserved from both the stations as per standard methods. Samples were collected during idol immersion successive three days of immersion activities from both the stations. The samples were subjected to physicochemical analysis including pH, temperature, dissolved oxygen, total calcium, total hardness, total alkalinity, phosphates, nitrates, biological oxygen demand, chemical oxygen demand, oil and grease, following the procedures prescribed by standard methods^{7,8}.

The analysis of physico-chemical parameters of the Kolar river were conducted in the laboratory of Bhalerao Science College, Saoner. Physical parameters were studied according to Welch, P.S.⁹, Lind, O.T.¹⁰ and chemical parameters were studied by using APHA.

Results and Discussion

pH: pH was analysed by pH meter and it is found that values of both the stations were changed i.e. Hydrogen ion concentration is considered as an important ecological factor, which is a result of addition of organic substances and materials used in preparation of idols. Nearly neutral pH of water is regulated by carbon dioxide and bicarbonates¹¹. The river water showed well alkaline water through the study period. pH of river at two stations were found to be 8.6 and 8.3 resp.

Temperature: The water temperature is one of the important parameters in river. In the present study, water temperature was

found to be 30°C and 29°C station wise resp. The studies showed the increased temperature of the river speed up the chemical reaction and biological activity that reduces the solubility of gases in water¹².

T.D.S.: Total dissolved solids include salt and variety of organic substances, which readily dissolve in water and often impart a degree of hardness. The value of total dissolved solids after idol immersion was found to be 316 mg/ltr and 216 mg/ltr. resp.

Total Alkalinity: Total alkalinity of water is mainly due to cations of Calcium, magnesium, Sodium and Potassium. It is also due to combined carbonate or bicarbonate or occasionally hydroxides. Analysis of water showed the higher alkalinity which was due to idol immersion¹³. The result of present study is evident⁵ regarding the religious activity in ponds of Varanasi. Ujjania N.C. and Multani A.A.¹⁴, Malik G.M. et al¹⁵ also reported the same.

Total Hardness: During idol immersion activity total hardness in river water was found to be 177mg/l and 159mg/l, which were high values. These results were evident by Gupta A.K.⁵, Vyas A. et al¹⁶, Malik G.M.¹⁷.

Dissolved Oxygen: Dissolved oxygen is also one of the important factors of water quality, which influences the biota present inside the river water. The idol immersion adversely affects the dissolved oxygen in water body and during this study it was observed low in Kolar river. Decrease in DO was due to the immersion activity and rise in temperature¹⁵.

Table-1
Physico-chemical parameters of Kolar river at Idol Immersion point

Sr. No.	Parameter	Station 1	Station 2
1.	pH	8.6	8.3
2.	Temperature(°c)	30	29
3.	T.D.S.(mg/l)	324	316
4.	Total Alkalinity(mg/l)	176	168
5.	Total Hardness(mg/l)	177	159
6.	D. O. (mg/l)	2.4	2.6
7.	B.O.D.(mg/l)	4.1	4.4
8.	C.O.D.	59.14	54.12
9.	Nitrates(mg/l)	0.025	0.019
10.	Phosphates(mg/l)	0.043	0.040
11.	Oil and Grease	0.54	0.49
12.	Total Calcium(mg/l)	132	129



Figure-1
Idol Immersion

Biological Oxygen Demand: Biological oxygen Demand is a direct measure of O₂ requirement and indirect measure of

biodegradable organic matter. The increased value of B.O.D. was again due to the idol immersion. Similar findings were observed by Jadhav P. and Dongare M.¹⁸.

Chemical Oxygen Demand: Chemical Oxygen Demand indicates the extent of chemical pollution mainly from chemicals used during idols painting. The C.O.D. values observed maximum during idol immersion. Similar findings were observed by Vyas, A. and Bajpai, A.¹⁹, Dhote, S. et al²⁰.

Nitrates: In the present study, nitrate values were increased after idol immersion because of organic matter along with idol immersion. Similar findings were shown by Dhote S. et al²¹.

Phosphates: Phosphate is considered to be the most significant among the nutrients responsible for eutrophication of rivers, as it is primary initiating factor. Concentration of phosphates recorded after idol immersion was increased. It may be due to deposition of ashes and chemical under religious activities and decomposition of organic matter in the water sediments.

Oil and Grease: Oil and grease if present in excess amount it interfere with aerobic and anaerobic biological process. It is present in the water can be extracted either, which is immiscible in water and can be separated by a separator funnel. In the present study oil and grease in both the stations were found to be 0.54 and 0.49 resp. The values of oil and grease were increased due to oil paints for painting the idols and oil offering by the devotees during worship.

Total Calcium: Values of total calcium in both the stations were observed very high due to the immersion activity. The concentration of Calcium increases due to the idol immersion⁶.

Conclusion

The present study on assessment of idol immersion on water quality of Kolar river shows that the idol immersion has negative impact on physical and chemical properties of water. Mythologically the water bodies are related religious sentiments but scientifically these are not suitable for human uses. This religious activity cannot stop but awareness among the people and proper ways through which idol immersion practice can be carried out without harming the environment. Some unique and creative methods should be adopted to make eco-friendly idols, natural colours etc. which can solve this pollution problem up to some extent.

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