



## Preliminary Study of Effects of Idol Immersion on Futala-Telangkhedi Lake Nagpur, India

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### Abstract:

The study area is the historic lake 'Futala-Telangkhedi' situated in the West Nagpur of Central India surrounded by wetlands, farmlands, forests and gardens etc. The variations in habitats and ecological conditions of lake are suitable for diverse range of flora and fauna. The present study is carried out at the Ganesha and Durga festivals during the month of September and October 2013 respectively. Water of this lake is examined before a week of idol immersion, at the time of idol immersion and one week after the immersion of idols. The idols are prepared from degradable and non-degradable components and paints containing heavy metals deteriorate the quality of water. It directly affects the flora and fauna of this lake. The report includes the study of effects of idol immersion on Futala-Telangkhedi Lake.

### Keywords:

Ganesha, Durga, Futala-Telangkhedi, Idol immersion, Water pollution.

### Introduction:

In India the water bodies are related to religious sentiments but not suitable for human uses. One of the main reasons of the deterioration of water quality is the rituals, in that idol immersion plays an important role. The Idols are constructed by clay, dried grass, plaster of paris, cloths, small iron rods and wires, bamboo etc. and decorated with different chemicals used in colors, paints and varnishes etc. The input of biodegradable and non-biodegradable substances deteriorates the water quality and enhances silt load in water.

Due to the religious activities the river systems of India is adversely affected. The pollution and nutrient load were increases after idol immersion in rivers, for example Tapi River (Ujjania and Mistry, 2012) and some other rivers of South Gujarat (Malik et al., 2012); Budhabalanga River of Odisha (Das et al., 2012). The effects of idol immersions in lakes of various Cities of India were examined through various studies, Hyderabad (Reddy and Kumar, 2001); Bhopal (Vyas and Bajapai, 2008; Bhat et al., 2012); Dhar town of Madhya Pradesh (Chaudhary et al., 2009); Bangalore (Sripathy et al., 2012) and Jodhpur Rajasthan (Mehta, 2013).

City of Nagpur is situated in the center of India and covers the area of around 220 sq. Kilometers; situated approximately at 21°0'0" N, 79° 5'24" E, latitude and longitude respectively. Nagpur is one of the greenest cities in India graced with large reservoirs, wetlands, forestlands, agricultural farms, gardens, landscapes etc. The Futala-Telangkhedi lake situated in the West of Nagpur; surrounded by wetlands, farmlands, forests and gardens etc. Thousands of idols of various sizes are immersed in Futala Lake, which is the largest idol immersion center in the Nagpur City.

A study on effects of idol immersion in Futala-Telangkhedi Lake, Nagpur of Central India is discussed in this report.

### Materials and methods:

During the year 2013, authors visited to the Futala lake before and after one month of Ganesha and Durga idol immersion. (The Festival of Ganesha is celebrated for ten days from *Ganesha Chaturthi* to *Ananta Chaturdashi* day in the month of Bhadrapada either in August or September and the Durga festival, *Navratri utsav* is for nine days in the month of Ashwin in October or November). Authors examined and recorded the alteration of water quality and pollution caused by idol immersion and effects on the flora and fauna.

### Results and discussion:

Festivals are an integral part of rich and diverse cultural heritage of India. In the Nagpur city festivals are celebrated with great enthusiasm. Most of the common festivals are Ganesha and

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Durga festivals. The idols of Ganesha and Durga are mainly made up of plaster of paris and other biodegradable materials. Futala lake is the largest idol immersion site of Nagpur city (Fig. 1). The lake environment is clean and pleasant before the immersion of ideols (Fig. 2). The lake water is clear and rich in flora and fauna (Fig. 3). After immersion of idols the turbidity of water increases and floating wastes are seen on water (Fig. 4). Tons of garbage deposited on the shore line of lake, consisting of bio-degradable and non-bio-degradable wastes (Fig. 5). Particularly the shore line of water body is polluted by solid and dissolved wastes for months (Fig. 6). This adversely affects the population of flora and fauna.

Pollution cause by the immersion of idols has many social, religious, scientific and environmental dimensions. The material used for making idols are non-biodegradable substances like plastic, plaster of paris, thermocol, synthetic colors etc. which deteriorate the water quality(Kaur, 2012).Idols immersion increases the nutrient load and concentration of toxic heavy metals in the Futala lake water (Lanjewar and Kelkar, 2008). The immersion of idols increases the pollution level significantly in lakes of Nagpur City and the water quality of lakes is unsafe for human use. The water quality of lakes is polluted with reference to quality physico-chemical parameters such as BOD and nutrients. The higher values of pH, nitrate, TDS, hardness, bicarbonates and chlorides decline the water quality. Futala Lake had higher suspended solid and the physico-chemical parameter of water was no longer good to support micro flora and fauna (Puri et al., 2011).Due to the immersion of large number of Ganesha and Durga idols colored with synthetic paints and the decorative materials used results in significant rise in the pollution of lake water (Sripathy et al., 2012).

The idols are painted with oil paints of various colors which contain heavy metals which are non-biodegradable and bio-accumulate and bio-magnify along the food chain and are severely neuro and nephrotoxic and some even carcinogenic. It is evident that the heavy metals viz., Copper, Ferrous, Calcium, Magnesium, Manganese, Molybdenum, Silicon, Arsenic, Iron, Lead, chromium, nickel, cadmium, zinc and Mercury are used to prepare synthetic paints of different colors. The concentration of these metals (mg/l) increases in multiple folds after the immersion of idols (Reddy and Kumar, 2001).These metals are absorbed in the bodies of aquatic flora and fauna and get accumulate in the food chain. When the levels of these metals exceed the tolerable limits it results in fish kill as well as other aquatic animals like snails, frogs etc. which is a common scene for some post-immersion days.



**Figure. 1-** The Satellite map of Futala Lake showing idol immersion sites. *Courtesy- Yahoo map.* (Thick line shows the immersion of large sized idols and thin line shows immersion of small to medium sized idols).

**Figure. 2-** Photograph of the East region of Futala Lake before the immersion period showing clear water and Lake Environment with no floating objects on the water surface.

**Figure. 3-** Photograph of the North-West of Futala Lake at pre-immersion period showing rich aquatic flora and fauna indicating the healthy natural habitat of Lake Ecosystem.



**Figure. 4-** Photograph of Futala Lake after some days of idol immersion showing the remains of idols floating on water surface. The lake water turns turbid due to presence of various particulate materials and colors used in construction of the idols.

**Figure. 5-** Photograph of the Futala Lake shore after idol immersion showing the dumping of floral garlands and other materials used.

**Figure. 6-** Photograph of Futala Lake after the immersion idol and other material showing polluted water and Lake Environment with floating waste on water surface.

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When such fish are consumed by humans they may have a risk of health hazards. Turbidity caused by variety of suspended particles adds large quantities of inorganic clay, silt and some organic materials like straw, jute, flowers, leaves and grains. The water color was disturbed completely during the idol immersion causing high turbidity (Kaur, 2012).

## Conclusion:

The input of biodegradable and non-biodegradable substances deteriorates the water quality and enhances silt load in the water bodies. The floating materials released during idol immersion after decomposition result in eutrophication of the lakes. Lakes and other water bodies are the most fragile, fertile, diverse, productive and interactive which have more complex ecosystem in comparison to running waters as they lack self-cleaning ability and hence readily accumulate great quantities of pollutants. Increased human activities damage the aquatic ecosystems and ultimately affect the quality of water.

## Suggestions:

- The idols should be made up of traditional clay instead of plaster of paris, baked clay, thermocol etc. The idols should be small in size to dissolve faster.
- The eco-friendly idols made can be constructed preferably with clay and natural water soluble colors. Not to use the synthetic and Non-biodegradable chemical.
- Before immersion all the garlands, flowers, leaves, artificial ornaments should be removed, the idols may be immersed into a corner of lake separated by a removable synthetic liners which are taken out along with remains of Idols followed by the desludging of lake.
- It is prefer to use artificial tank for immersion of idols.
- At the immersion sites, burning of solid wastes comprising leaves, flowers, clothes, decorating materials, wood etc. should be avoided and use all such wastes for making organic compost.
- Environment awareness programmes are needed among the masses. Awareness, planning and management of environmental resources are essential to prevent environmental degradation of lakes (Puri et al., 2011).

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