

## STUDY OF EFFECT OF KUMBHAMELA ON GODAWARI RIVER WATER QUALITY

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### Abstract:

*Kumbha Mela is attended by millions of people. Thousands of holy men/women (monks, saints, sadhus) grace the occasion by their presence. A ritual bath at a predetermined date & place is the major event of this festival known as 'Shahi Snan'. During bathing, people not only take dip in the water body but also drink its water irrespective of its water quality suitability. During the Shahi Snan by taking a bathing activity there is Pollution of Godavari at Nashik, Trimbak & there is generation of Solid Waste, Plastic, Paper as well as Bio-Medical Waste also. In addition of the above there is Vehicular Pollution, noise pollution. Considering this present work is undertaken to study Water quality of Godavari river during Kumbha Mela. On days other than Shahi snan fecal Coliforms count by MPN method at sights of Shahi snan were more than 1800 coliforms/ 100 ml as many people take dip in the river. pH of majority of the water samples was alkaline. After Shahi snan coliform count was slightly less as lot of water was released from Gangapur dam and proper disinfection measures. pH was near neutrality.*

**Key words:** water pollution, coliforms, shahi snan, pH.

### Introduction:

River water resources are dynamic in nature and are affected due to expansion of irrigation, industrialization, urbanization etc. India's cultural heritage dates back to 5000 years. Its religion is a way of life being an integral part of Indian tradition. Religious tourism is very common in India it is commonly referred to as 'faith tourism', for this people travel individually or in groups for pilgrimage. (Varghese) Nashik is one of the major cities of religious tourism and it hosts largest auspicious religious gathering in the world known as Kumbhmela. (Mohapatra) The Astrological aspect of Kumbh is related with traversing planets and stars and their certain alignment. In the Nashik and Trimbakeshwar Kumbhmela is celebrated once in twelve year when the Jupiter enters in Leo or Simha (zodiac sign) and the Sun and Moon in Cancer. (<https://kumbhmela2015>) From

Management point of view Kumbh Mela is a great management challenge. Around millions of devotee take holy dip in the river. (Harvard B-School)

During Kumbha mela the influx is far greater than the basic facilities available, and the carrying capacity of the river. Ultimately the receiving ecosystem is affected during most part of the year and the condition is very critical during rainy season. (Madhyastha) Therefore, periodical monitoring and conservation of water quality of these resources is very important. The quality of water is defined in terms of its microbiological parameter - number of coliforms.

In developing countries like India, where fresh water crisis is gradually unfolding due to human actions, maintaining quality of river water has particularly received immense attention. (Ferry)

The aim of this study is to understand the water quality of river Godavari during Kumbhmela.

#### Methodology:

**Study Area:** Nashik is located in the northern part of the Maharashtra state, at 20.00°N 73.78°E and stands at the confluence of the Godawari River. The climate of Nashik district is characterized by dryness except in the monsoon season. The year may be divided into four seasons, the cold season from December to February followed by the hot season from March to May and the south-west monsoon season from June to September followed by the post-monsoon season during October and November. Average rainfall of the District is between 2600 and 3000 mm. (nashik.nic.in) The present study was confined to the region of Godawari river where people take holy bath. The river Godavari originates 24 km (15 mi) from Brahmagiri Mountain, Tryambakeshwar, Nashik and flows along the northern boundary of the city through the residential settlement in the city.

Water samples were collected before Shahi snan & after Shahi snan during 2015 from five selected sites of the River Godawari (site 1-near Mhasoba Patangan, site 2-near Gadgebaba bridge, site 3-Ramkund, site 4-Tapovan, site 5- Gandhi talav). The samples were collected from a depth of 1 foot below the surface of river using the plastic containers (1000 ml). Water samples were stored in the refrigerator to retard the biochemical activities. (Khan) The samples were analyzed for pH and total coliform count as per standard methods mentioned in. (APHA)

For total coliform count five test tubes containing 10 ml of double strength Mac Conkey's broth and 10 test tubes containing single strength Mac Conkey's broth with inverted durhams tubes were taken. The collected water samples were inoculated in each Mac Conkey's broth tubes i.e. 10 ml water sample was inoculated into each five tubes containing 10 ml double strength lactose broth, 1

ml water sample was inoculated into five tubes containing 5 ml single strength broth and 0.1 ml water sample inoculated into each 5 tubes containing 5 ml single strength broth. All the test tubes were incubated at 37 °C for 24 hr. After incubation, all the tubes were observed for acid and gas production. The production of acid and gas indicated the presence of coliforms and thus test was considered positive. ( Kulshrestha)

### Result & discussion:

pH is an important factor in chemical and biological system of natural water as the toxicity of many compounds is greatly affected with the change of pH. In this present investigation of the Godawari River all the selected water samples collected before Shahi snan from five sites showed variations in pH. Here this parameter ranges from 8 to 10 as shown in Table-1.

Table-1 Count of coliforms / 100ml and pH of water samples.

Site No.	Coliforms / 100ml		pH	
	Before Shahi snan	After Shahi snan	Before Shahi snan	After Shahi snan
1	≥ 1800	40	10	7
2	≥ 1800	≥ 1800	10	7
3	≥ 1800	45	8	6.5
4	≥ 1800	≥ 1800	9	7
5	≥ 1800	32	8	7

Changes in water chemistry also affect protected species, such as salmon, freshwater pearl mussels and water voles, in and around rivers, lochs and coastal waters. In addition to these impacts, diffuse pollution can affect the business profitability of farms through the loss of valuable nutrients, top soils and pesticides to the river and also affect the local economy, particularly through impaired tourism and recreation.

From the MPN count all the water samples fall within the "Poor" and "Very poor" categories. On the days of Shahi snan coliform count was slightly less as lot of water was released from Gangapur dam and proper disinfection measures. Thus river water from these sources is unsuitable for drinking purposes.

An interesting fact noticed during Kumbha Mela is that polluted water is visible to even naked eyes, still people's faith in Godawari river's healing powers and its religious and spiritual importance has remained undisturbed. The water of Godawari river is highly contaminated at both the selected sites during the course of study and it is unfit for consumption. Urgent steps must be

taken to improve the quality of Godawari river.

A very surprising fact is that even if water of Godavari is so polluted still there is no serious report of epidemic, only few cases of some bacterial infections while we see problem of unknown infections under best of the hygienic conditions.

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