

Experimental Verification of Namami Gange Project on Various Parameters of Gangas Water in Varanasi

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Abstract:

The Pollution of India's National River Ganges has become dangerous for people near it. After observing the data, it was found that Ganges in high profile cities like Kanpur, Varanasi and Allahabad was highly polluted. In this study water quality parameters were analysed in these highly polluted areas before and after the launching of Namami Gange project. In this research it is shown that if sewage treatment capacity is increased then how pollution in the river decreasing. Self-purification of Ganges is taken into account using de-oxygenation and re-aeration process. After analysing self-purification concept certain results are concluded about the pollution of river. It is advisable that sewage treatment network should be increased on a large scale in highly polluted stretches. The goal of this research is to determine the change in quality parameters of Ganges water due to Namami Gange project.

Keywords: River, Biological oxygen demand, ph values, sewage, Industrial waste, self-purification, de-oxygenation, re-aeration, sewage treatment plants.

I. INTRODUCTION

Ganga River is one of the prime rivers of India and is declared as the National River of India. It flows east through the Genetic plains of Northern India into the country of Bangladesh. The river has immense religious significance and considered as the holy river of the Hindus. Historically too the river is important as many important cities and capitals have been located along its banks. The Ganga sustains one of the world's highest densities of population and drains an area of approximately 1000000 sq. kms.

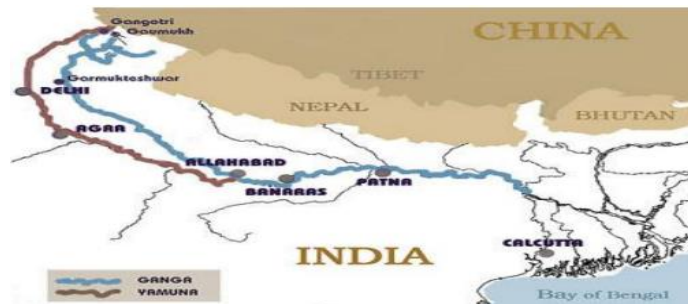


Fig. 1- Map Of River Ganga

The river Ganges flows through India, Nepal and Bangladesh. The major cities along the River Ganges are Haridwar, Muradnagar, Moradabad, Rampur, Allahabad, Kanpur, Patna, Varanasi and Rajshahi. The

Ganges forms its Delta at the Bay of Bengal. The Ganges travels a distance of 1557 miles beginning from the point of origin till the ultimately merge into the ocean. Due to various human and industrial activities the level of pollution in Ganga river was at its peak in year 2013. “Namami Gange programme” was launched in June 2014 with budget outlay of Rs. 20,000 Crore to accomplish the twin objective of effective abatement of pollution, conservation and rejuvenation of national River Ganga.



FIG:2- POLLUTION LEVEL IN GANGA

II. OBJECTIVE

Since water quality parameters for different uses is decided as per BUREAU OF INDIAN STANDARDS.

So our main objectives are as under:

- a. To determine the water quality parameters of river Ganga at Muradnagar.
- b. To compare this collected data with the data of year 2013 i.e the data before the launching of Namami Gange Project and with standard data.

III. METHODOLOGY

1. Parameters Consideration:

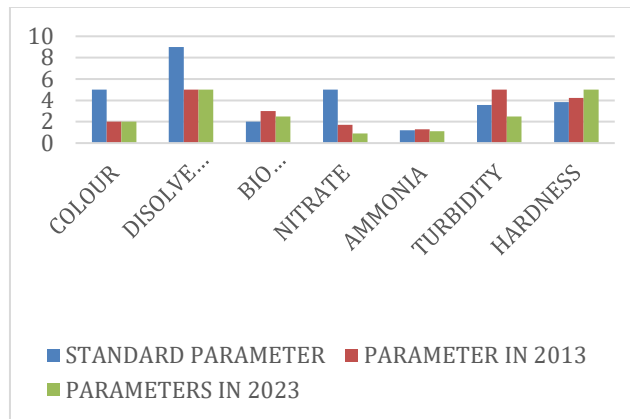
- A. Colour
- B. Dissolved Oxygen
- C. Bio Chemical Oxygen Demand
- D. Nitrate
- E. Fluoride
- F. Turbidity
- G. Hardness

2. Standard Parameters:

QUALITY PARAMETERS	ACCEPTABLE LIMIT
Colour	< 5
Dissolved Oxygen	7-11
Bio Chemical Oxygen demand	< 2 mg/l
Nitrate	45-100 mg/l
Fluoride	< 1.2 mg/l
Turbidity	5 NTU
Hardness	200 mg /l

IV. EXPERIMENTAL OBSERVATION AND RESULTS:

PARAMETERS	PARAMETERS IN YEAR 2019	PARAMETERS IN 2023	CHANGE IN PARAMETER
Colour	2	2	0
Dissolved oxygen	5 mg/l	5 mg/l	0
Bio Chemical Oxygen Demand	3 mg/l	2.5 mg/l	- 0.5 mg/l
Nitrate	17 mg/l	9 mg/l	- 8 mg/l
Fluride	1.3 mg/l	1.1 mg/l	- 0.2 mg/l
Turbidity	7 mg/l	3.5 mg/l	- 3.5 mg/l
Hardness	220 mg/l	260 mg/l	40 mg/l



V. CONCLUSION

- Some parameters such as “Colour and Dissolved Oxygen” remains unchanged and are in permissible limit.
- Some parameters such as “Bio Chemical Oxygen demand, Nitrate and Ammonia” reduces in river Ganga at Muradnagar due to construction of Sewage treatment Plant and various efforts under Namami Gange Project.
- There is still a huge scope of improvement and the direct dumping of industrial waste and water should be avoided.

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