



ANALYSIS OF pH OF GANGA RIVER WATER IN ITS BODY AT VARANASI DISTRICT

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ABSTRACT:The river Bhagirathi and river Alaknanda originate in Garhwal Himalayas and join at Devprayag to form River Ganga. River Ganga traverses through Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal and thereafter enters Bangladesh. The important tributaries of Ganga are the Yamuna, the Kali, the Ramganga, the Ghaghra, the Gandak, the Kosi, and the Sone. Various urban centers viz. Haridwar, Kannauj, Kanpur, Allahabad, Varanasi, Patna and Kolkata which are located on the banks of river Ganga, draw water from the river to meet their requirement and almost the entire waste water generated by these centers is disposed off into the river. The pH monitoring of Ganga River at Varanasi was carried out at an interval of one month. The sampling sites were selected on the basis of their importance. A lot of nalas carrying sewage and industrial effluents are discharged into the river Ganga. The analysis was carried out for pH. Results are expressed on a monthly basis.

INTRODUCTION :-

The Ganga is a holy and historical river of India, but due to its dense population of over 400 million, the unplanned urban expansion, rapid industrialization, deforestation as a need of urbanization, and increased use of water for different irrigation and industrial activities, increasing pollution in the river is occurring. The Ganga was ranked among the world's five most polluted rivers. River Ganga is considered the longest and the holiest river of India, which originated from Gangotri glacier, at Gomukh, and ends at Bay of Bengal located in the East of India. It travels a distance of about 2,525 km during its entire course and the total area covered by its basin is about 86,1404 sq.km. The water of the Ganges which is also known as the "blue gold" is the major source of water to northern India, but because of the continuous growth of India's population and its economy, it is being overexploited. River Ganga occupies a unique position in the cultural ethos of India. According to the Vedas, after long time arduous prayers made by King Bhagirathi for his deceased ancestors' salvation, the river has descended from heaven to earth. From immemorial times, the Ganga has been India's river of faith, devotion, and worship. Millions of Hindus treat it as a Holy river. Even today, people from all over the country and abroad carry treasured Ganga water because it is "holy" water and known for its "curative" properties.

Tiwari and Mishra have studied the major river of India and reported that it is severely polluted at most of its ghats. Saxena and coworkers based on physico-chemical parameters were of the opinion that most of the river stretches of Ganga were considerably polluted. Some investigators (Sarangi and Mishra, Single et al. and Trivedi) reported major work on river pollution.

Materials and Method

The eight sampling sites were located as Betawar Ghat (S_1), Samne Ghat (S_2), Assi Ghat (S_3), Manikarnika Ghat (S_4), Varuna-Ganga confluence Ghat (S_5), Balua Ghat (S_6), Markandey Ghat (S_7) and Gomati-Ganga confluence Ghat (S_8) were selected in Varansi District. The sampling of Ganga River water at each site was performed throughout the duration from January 2023 to December 2023 at monthly intervals. The pH was measured by electronic method (Sarangi and Mishra) employing the hydrogen ion sensitive electrode. This method finds wide applications was measured and mentioned in the table-1.

Duration	Sampling Sites							
	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
Jan	8.2	7.8	8.1	7.5	7.7	7.1	7.3	7.5
Feb	8.1	8.1	8.0	7.2	7.8	7.4	7.5	7.7
Mar	7.4	7.9	8.0	7.8	8.1	8.2	8.0	8.3
Apr	7.2	8.1	8.3	8.2	8.0	8.1	8.3	8.2
May	7.6	8.5	8.4	8.3	8.2	8.2	8.1	8.3
June	7.0	8.3	8.5	8.4	8.2	8.1	8.0	8.1
July	8.3	7.1	8.3	7.8	7.8	7.3	7.4	7.6
Aug	8.4	7.3	8.1	8.1	8.5	8.2	8.3	8.4
Sep	8.1	7.5	8.2	8.0	7.9	8.1	8.2	8.0
Oct	8.0	8.0	8.0	8.3	8.3	8.2	8.0	8.1
Nov	8.1	8.1	8.3	8.0	8.1	8.1	8.0	8.3
Dec	8.5	8.3	8.1	8.5	8.7	8.2	8.1	8.4

RESULTS AND DISCUSSION

The pH of Ganga river water is greater in winter than in summer season in the duration of January 2023 to December 2023. In which may be visualized due to some bio-chemical transformations aggravated by rise in temperature leading to reduce the pH of the medium. The significant fluctuations are partly due to meteorological changes. The pH at site S₁ has been found minimum (7.0) in June 2023 while the same attained the highest value in December 2023. From June onwards in different months there were slight fluctuations. The pH of Ganga river has been highest (8.7) in the month of December at S₅. The change in pH of water from July till February has been found almost insignificant. But in some months due to unspecified reasons the pH was lower than in the expected one. In months of August and December pH of Ganga river water was within the permissible limit. In other months of the year, the pH was on the alkaline side, which commands recommendation for person suffering from hyper acidity on comparing the pH of different stations it may be concluded that the lowest value is observed at the peak of summer (May, June) and highest during rainy season.

On comparison of pH observed which will improve the water quality of river, may be attributed to self purification phenomenon occurring in natural water resources. For all the sites in every months, Ganga river water was found slightly alkaline and never acidic. This conformation shows that there is no any dominant acid source of effluents coming from soil may evolve acidic character in Ganga river water.

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