



# “Study of Fluoride concentration in the Godavari River near Shahagad”

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## Abstract

Water is essential for the survival of humans, animals, and plants. Surface water quality is a complicated issue since it is contaminated by both natural and manmade influences.

Fluoride is an important chemical parameter because, while it is necessary for humans to prevent tooth decay in normal quantities, it is also responsible for a variety of disorders such as dental and skeletal fluorosis when taken at greater concentrations. When water runs over fluoride-containing rock, the fluoride compounds combine with the water, resulting in fluoridation of water. The purpose of this study is to determine the fluoride concentration of the Godavari River at two locations near Shahgad Taluka Ambad, District Jalna, in Maharashtra. Fluoride levels in the water ranged from 0.33 mg/L to 0.91 mg/L. According to the investigation, fluoride levels were found below the permissible level in two selected samples of the Godavari River at Shahagad.

**Keywords** -- Godavari, Shahagad, fluoride, river, Gondi.

## Introduction:

In India, the pollution of water is one of the most serious threats to public health. Fluoride contamination of water is a major problem all over the world, causes health risks such as dental and skeletal fluorosis. Fluoride is normally detected in drinking water supplies as both surface and groundwater are contaminated with it (Sankhla and Kumar, 2018).

According to the Bureau of Indian Standards, the acceptable level of fluoride is 1.0 mg/L, and the maximum permissible value is 1.5 mg/L (BIS, 2012).

As minimum amount of intake of dietary fluoride is associated with reduced dental cavity and Healthy bone, however short- and long-term effect on human health are related with higher dosage of fluoride (Ozsvath, 2009).

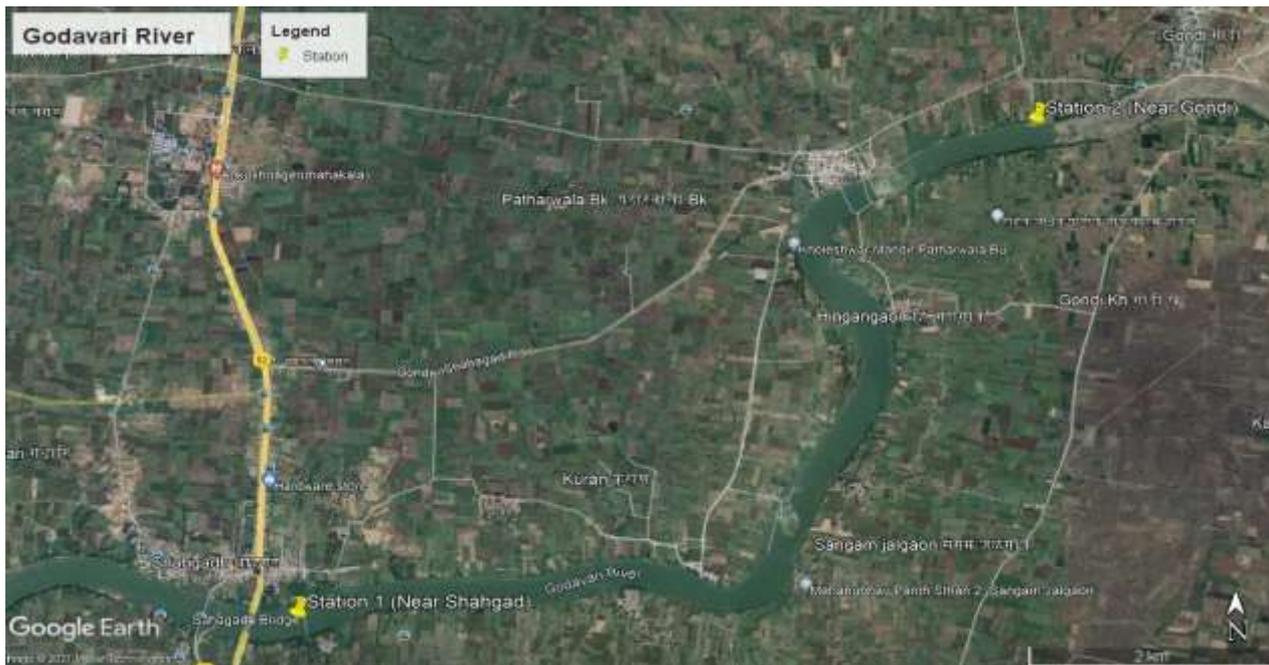
Presence of more fluoride in drinking water can badly affect the human health (Bennajah et al. 2010).

Excess fluoride consumption can affect both animals and humans, it causes mottled teeth in young animals. In long-term Fluoride has deteriorating fertility in both animals and humans. At very high concentration of fluoride, Plants restrict the accumulation of chlorophyll (Sadat, 2012).

The goal of the present study is to determine the quantity of fluoride in the Godavari River, near shahagad.

## Study area

Godavari River near Shahagad and Gondi in Ambad Tehsil of Jalna district had two sampling sites for analysis of fluoride content.



**Google Earth: Two sampling sites of River Godavari near Shahagad and Gondi village, Ambad Tehsil, Dist Jalna, Maharashtra, India.**

## Material and Method:

Two sampling stations were selected for monitoring of fluoride. These water samples were assessed once a month for regular analysis from January 2018 to December 2018 the fluoride content in collected water samples were estimated by using SPADNS calorimetric method as described by Maiti (2004) the results were expressed in mg/L.

## Result and Discussion

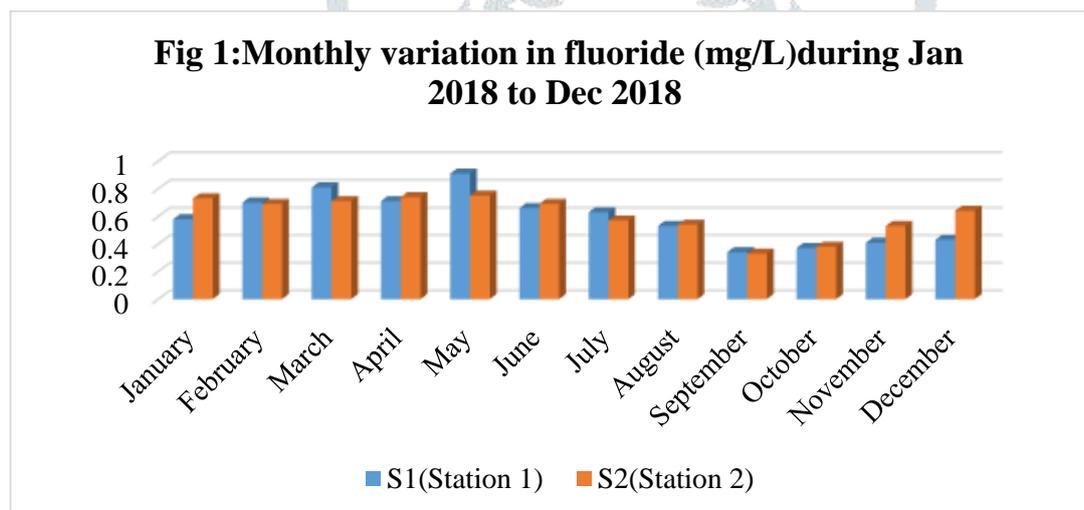
During the present investigation two sampling stations were selected for study of Fluoride content in Godavari River. Samples were collected and analysed. The results obtained from present sites were represented in (Table 1) and (Fig.1). Monthly variation of Fluoride in mg/L from river Godavari (Near Shahagad and Gondi)

**Table 1: Monthly variation in fluoride levels during January 2018 to December 2018, in Godavari River**

Month	S1(Station 1)	S2(Station 2)
January	0.58	0.73
February	0.70	0.69
March	0.81	0.71
April	0.71	0.74
May	<b>0.91</b>	<b>0.75</b>
June	0.66	0.69
July	0.63	0.57
August	0.53	0.54
September	<b>0.34</b>	<b>0.33</b>
October	0.37	0.38
November	0.41	0.53
December	0.43	0.64

**Station1:** Shahagad

**Station2:** Gondi



(Ugale, 2016) studied in Jakekur Reservoir and observed the value of fluoride ranges from 0.02 to 0.06 mg/L.

The fluoride values were summarized in table 1 in the present study value was ranges from minimum 0.34 mg/L to maximum 0.91 mg/L from the S1 (station 1) and from minimum 0.33 mg/L to maximum 0.75 mg/L from S2 (station 2). The result indicates that fluoride levels were within acceptable limits. Probable reason of high fluoride concentration in summer season was due to low water quantity in summer season. The presence of fluoride from S1 sampling stations was may be due to disposal of domestic sewage

(Bhosle et al. 2001) examined the concentration of fluoride in the Godavari River and observed the fluoride levels that range from 0.82 to 1.69 mg/L from downstream and in it was ranges from 0.75 to 1.65 mg/L from upstream.

Gikunju et al (2002) examined river water samples and observed the highest fluoride concentration was 0.85 ppm in Laikipia district and lowest was 0.08 ppm in Murang'a district.

(Shaikh et al. 2012) studied fluoride levels from Siddheshwar Dam and found fluoride ranges from 0.05 to 2.4 mg/L in the first year and 0.081 mg/L to 2.4 mg/L in the next year.

(Akoto and Adiyiah, 2007) studied surface & Groundwater from Ghana and observed the Fluoride values varied from minimum 0.32 mg/L to maximum 1.03 mg/L from Pruso and Fiaso villages respectively

## Conclusion

The results of the present investigation about fluoride concentration of Godavari River near Shahgad showed that maximum concentration was recorded 0.91 mg/L from station 1 during summer, and minimum Fluoride concentration was noted 0.33 mg/L from station 2 during the winter season. Both the stations have fluoride concentrations below the acceptable level.

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