

# Occurrence of fluoride content in bore-well water at Ahmedpur region, Latur, Maharashtra

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## SUMMARY

The present work has been carried out in order to study the level of fluoride content in bore-well water. Fluoride content was estimated from bore-well drinking water of Ahmedpur region of Latur District (M.S.) in the year 2008. From this area 20 bore-well water samples were collected for checking fluoride contents. The concentration of fluoride content was found in between 0.3 to 2.4 mg/lit. In some bore-well drinking water samples, the fluoride content was more than the permissible range (0.5 mg/lit) affecting the yellowing of teeth in the children and causing dental and skeletal fluorosis in different age group of people of Ahmedpur area.

In India, the main source of drinking water are rivers, lakes, storage dams, well, bore-wells etc. All these resources are more or less polluted. Only 20% people get clean drinking water and rest 80% satisfy their thirst from polluted water (Kadam *et al.*, 2006). In water, number of organic and inorganic compounds are found in dissolved condition in various proportions, those which are useful as well as harmful to the human being and also to the plants.

Fluoride is an important trace element in human life. It is useful in preventing tooth decay and maintaining the bone structure. Deposition of calcium phosphates in matrix vesicles is initiated by fluoride and thus help in facilitating the nucleation process prior to bone mineralization. It also plays an important role in the formation of dental enamel. Normal metabolism of bones and teeth require fluoride in some amount.

At higher concentration fluoride is a most toxic compound. It causes Dental Fluorosis and Skeletal Fluorosis in human beings. Fluorosis is caused by high fluoride intake from drinking water, food, air, medicines and cosmetics (Gupta *et al.*, 1994). Fluorides also reduce the chlorophyll pigments and protein contents in the plants (Malik and Arya, 2008).

## MATERIALS AND METHODS

The samples of water for the analysis were collected freshly, early in the morning 20 bore-wells of different regions of Ahmedpur Taluka of Latur district. Fluoride content was estimated by APHA (1989).

## RESULTS AND DISCUSSION

Fluoride in different concentrations was found in all the water samples which were collected from different areas of Ahmedpur. The fluoride percentage was found in the range between 0.3 to 2.4 mg/lit. The concentration of fluoride in various water samples is given in Table 1.

The permissible limit of fluoride content in drinking water recommended by ISI and WHO is 1.0 mg/lit. But Teotia and Teotia (1984) suggested that the maximum permissible limit of fluoride as mg/lit. They also reported that more than 0.5mg/lit fluoride in drinking water causes 'Yellowing of Teeth' in human beings. The high fluoride content in water is generally associated with low concentration of calcium, magnesium and high concentration of bicarbonates and nitrates ions (Gupta, 1991).

Among these water samples, the concentration of fluoride exceeded the permissible limit in 11 samples. In 6 samples, fluoride content was found more than 0.5mg/lit. The two samples Tambat Sangvi-I and Tambat Sangvi-II were with extremely high concentration of 2.4 mg/lit and 2.3 mg/lit, respectively. Yellowing of teeth was observed in Tambat Sangvi village in more than 93% of the school going children, which is a major public health problem in this village. The people who use the water for drinking purposes from the sampled bore-wells Sr. No. 02, 08, 10, 11, 12, 14, 16, 18 and 19 may suffer from dental and skeletal fluorosis because of higher concentrations of fluoride present in water.

### Key words :

Bore-well water, fluorosis, Fluoride, Ahmedpur region

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**Table 1 : Fluoride contents in bore-well water samples from different localities**

Sr. No.	Area of collection	Name of owner	Fluoride conc. (mg/lit.)
01	Sora	Shri Angad Mekle	0.9
02	Lanji	Shri Sugriv Munde	1.9
03	Tambat Sangvi- I	Shri Girish Kadam	2.4
04	Vilegaon	Shri Ramrao Telange	0.6
05	Mavalgaon	Shri Rangnath Patil	0.4
06	Kajal Hipperga	Shri Pravin Reddy	0.4
07	Ugilewadi	Shri Nilkant Ugile	0.8
08	Kolwadi	Shri Giridhar Bandewad	1.1
09	Tambat Sangvi- II	Shri Pandurang Narvate	2.3
10	Votala	Shri Gopinath Karande	1.6
11	Lendegaon	Shri Mohanrao Mane	1.7
12	Vairagadh	Shri Ram Bhadade	1.2
13	Kendrewadi	Shri Sitaram Kendre	0.5
14	Sonkhed	Shri Ashok Dhakne	1.5
15	Mankhed	Shri Vijay Sangule	0.6
16	Patoda	Shri Balaji Pawar	1.7
17	Rokda Savargaon	Shri Ashokrao Jadhav	0.9
18	Brahmpuri	Shri Vidyasagar Mane	1.4
19	Bodka	Shri Sanjay Sude	1.0
20	Kingaon	Shri Vitthalrao Bodke	0.3

Similar observation were found by Short *et al.* (1973), Choubisa *et al.* (1995) and Ishiah *et al.* (2003).

The present study deals with observation of the high concentration of fluoride in drinking water of rural areas of Latur where the people suffer from the disease "Fluorosis". Therefore, the main control of disease is to provide the safe drinking water containing low concentration of fluoride to the villages.

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