

## A Study of Fluoride Content in Ground Water Sources of Buldana District

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### Abstract

The occurrence of fluoride in ground water is a major public health issue. A study was carried out to assess the status of fluoride content in ground water sources of villages of Buldana district. The water samples were collected from the ground water sources of 10 villages.

The results revealed that fluoride content in samples were ranging from 0.26 to 1.68 mg/l.

**KEYWORDS** : Fluoride, Ground water, villages, Buldana, Fluorosis

### Introduction :

Many villages of Buldana district of Maharashtra are facing problem of water scarcity and are dependant on ground water sources for their drinking water. Review of literature and water quality analysis reports revealed that the available ground water sources such as borewell, well, handpumps are contaminated. Management of contaminants is a major public health issue.

The occurrence of fluoride in ground water is a problem faced by many states in India. High concentration of fluoride in water cause health problems such as skeletal fluorosis, dental fluorosis and mottled teeth stiffening of joints and bone problems. In the present study attempts were made to evaluate fluoride content in ground water sources of villages located in Buldana district of Maharashtra state, India.

### Background of Study Area:

Buldana is the western most district of Vidarbha region of Maharashtra state in India. It lies between 19<sup>0</sup>51' and 21<sup>0</sup>17' north latitudes and 75<sup>0</sup>57' and 76<sup>0</sup>59' east longitudes and falls in survey of India toposheets 55-A, 55-C, 55-D and 55-P. The district covers total geographical area of 9661.00 sq.km. It is surrounded by Madhya Pradesh state in the north, on the east by Akola district, on the south by Parbhani district, in the west Aurangabad and Jalgaon district and in the north east by Amravati district. The district divided into talukas Viz. Buldana, Motala, Malkapur, Nandura, Jalgaon Jamod, Sangrampur, Shegaon, Khamgaon, Chikhli, Mehkar, Lonar, Sindkhed Raja, Deulgaon Raja.<sup>(1)</sup>

Buldana district is located in the central part of the state of Maharashtra. Nearly 72 per cent of households are drinking water from public sources and 17.57 per cent of the households depends upon private sources. Buldana is one of the minority concentrated districts of India which lags behind in terms of socio-economics indicators.

The total population of Buldana was 22,32,480 of this 80.4 per cent reside in the rural area as per 2001 census. <sup>(1)</sup>

Hundreds of villages under the district have been currently facing water scarcity. In Lonar Tehsil, total 65 villages are under the grip of acute water scarcity. In Sindkhed Raja Tehsil, 54 villages are facing water scarcity. In Shegaon and Sangrampur Tehsil 56 villages are facing water scarcity. <sup>(1)</sup>

Jalgaon Jamod & Nandura Tehsils have 50 villages which are scarcity hit. In remaining tehsils such as Chikhli, D.Raja, Mehkar, Buldana, Motala many villages are facing water scarcity. In scarcity period, population is forced to use any quality of water which is available and which leads to serious health problems.

### Material and Methods :

By keeping this views in mind, in the present study attempts were made to study the fluoride content in ground water sources and it required to make the public aware about the effects of fluoride on human health.

The water samples were collected from ground water sources of ten villages of Buldana district and were analyzed for various parameters such as pH, Total Dissolved Solids, Total Hardness and Fluoride content using standard procedure. (APHA-1995)<sup>2</sup>

All reagents and chemicals used were of analytical grade.

### Results and Discussion :

The results of analysis of ground water samples from 10 villages of Buldana district are given in Table 1.

Table 1 : The results of analysis of ground water samples of Buldana district.

Sample No.	Name of Village	Water Supply source	Water Quality Parameters			
			pH	Total Dissolved solids	Total Hardness	Fluoride
1	Sundarkhed	Tap water (Well)	8.00	550	338	1.58
2	Warwand	Bore well	7.80	610	358	0.26
3	Palaskhed Nago	Well	7.20	490	300	0.54
4	Deulghat	Hand Pump	7.10	374	204	0.47
5	Shirpur	Well	7.30	350	156	0.69
6	Takarkhed (U)	Bore well	7.40	490	332	0.62
7	Jawalkhed	Bore well	7.00	700	370	1.68

8	Hiwara (A)	Well	7.60	590	264	0.68
9	Dusarbeed	Well	7.00	364	160	0.47
10	Bibi	Hand Pump	7.00	390	144	0.34

In the present study, in addition to evaluation of fluoride content, other parameters such as pH, Total Dissolved Solids, Total Hardness were also analyzed.

The pH of ground water samples analyzed ranging from 7.00 to 8.00 pH. The total dissolved solids are ranging from 350 mg/lit. to 700 mg/lit. The total hardness values ranging from 144 mg/lit to 370 mg/lit.

The fluoride content in ground water samples ranging from 0.26 mg/lit to 1.68 mg/lit.

The fluoride content in all the ground water samples were found to be well within permission limit as per WHO standards<sup>3,4</sup> except sample No. 1 (1.58 mg/lit) & 7 (1.68 mg/lit).

### Conclusion :

Based on present study, it is concluded that fluoride content in two villages is above permissible limit. The water from fluoride contaminated sources should be used after proper defluoridation process. The public awareness campaign is necessary to make the public well aware about health problems associated with high fluoride content in drinking water samples. Author is creating water quality awareness in teachers and students of schools located in Buldana district through various activities.

### References :

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