

Analysis of Fluoride Concentration at Mariyahu Tehsil of Jaunpur District (U.P.) India

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Abstract

Concentration of fluoride should be within permissible limit as prescribed by organizations like ICMR, WHO, BIS. High concentration of fluoride in drinking water causes fluorosis and mottling of teeth. Fluoride ions enters in ground water from geological formation. The absence or very low concentration of fluoride ions causes dental carries in children's teeth. So it is necessary to find out the concentration of fluoride ion in water used for drinking purpose. In present study fluoride ion concentration is determine by standard analytical procedures and found in the range from 0.35 to 1.95 ppm at different sampling stations of Mariyahu Tehsil in Jaunpur district during March. 2018 to May, 2018.

Keywords: - Drinking water fluorosis, mottling of children teeth.

Introduction:- Water is abundantly found on earth. Water is essential not only for humans but also for animals , plants and other living organisms . Only 0.3% of total water of earth is available for human use. Drinking water should be of high quality and constituents required for human health under prescribed limit .For the present study the Mariyahu Tehsil of Jaunpur district of U.P is chosen and sample were collected ,analysed for only fluoride ion concentration .In this area bore well water is major source for drinking purpose .Fluoride ingested with water is almost completely absorbed and distributed rapidly throughout the body, with main retention in the bones and small portion in teeth . Recommended value of fluoride ion according to WHO is 0.5 to 1.0 ppm [3].

Material And Method :-

In present study to access the fluoride content in drinking water samples collected from different sampling sites of Mariyahu Tehsil, of Jaunpur district from March, 2018 to May,2018 details of which are given in table no.1

Table No.1
Details of sampling stations

SN.	Locality	Sampling Stations	Owner of the Bore-well
1.	Mariyahu Kasba	MU1	Govt.
2.	Jogapur	MU2	D.K. Chauhan
3.	Dadra	MU3	Sumit Kumar
4.	Dinarpur	MU4	Lallu yadav
5.	Gadiya	MU5	Pitamber Mishra
6.	Ranipur	MU6	Neelkanth Napit
7.	Mariyahu Railway Station	MU7	Surya Prakash Gupta
8.	Shivpur	MU8	Gunja Singh
9.	Rasoolpur	MU9	Mod. Khalid

Water sample of bore wells were collected from above mentioned sampling stations of Kerakat Tehsil and determined fluoride ion by zirconium alizarin-s method. In the acidic medium zirconium react with alizarin red –s to form complex, which is bleached on the addition of fluoride ion and colour changes from red violet to yellow green [4]. 20ml of filtered sample is taken and sodium arsenite solution is added to remove residual chlorine. 5ml of zirconium alizarin solution added to the standards and samples solution mixed well immedietly and measured the absorbance after 20minutes at 520nm.

Result and Discussion:- The result of analysis of fluoride ion content of water samples of borewells of amarpatan regions of satna district are given in the table 2 .From the table the fluoride content ranges from 0.35 to 1.9 ppm at different sampling stations .In the present study fluoride concentration is found within the prescribed limit except MU2, MU6 and MU7. Apart from rock forming mineral which on weathering can contribute to the fluoride content in ground water the use of phosphoric fertilizer in agriculture and industrial effluent can enhance the concentration of fluoride.

Table No.2
Fluoride concentration of different borewells

SN.	Sampling Stations	March -2018	April-2018	May-2018
1.	MU1	0.80	1.10	1.05
2.	MU2	1.05	1.80	1.30
3.	MU3	0.40	0.90	0.55
4.	MU4	0.95	0.65	0.70
5.	MU5	0.90	0.65	0.85
6.	MU6	1.85	1.80	1.75
7.	MU7	1.90	1.90	1.90
8.	MU8	0.75	1.30	1.20
9.	MU9	0.50	0.70	1.20

Fluoride Ion Concentration in Ppm

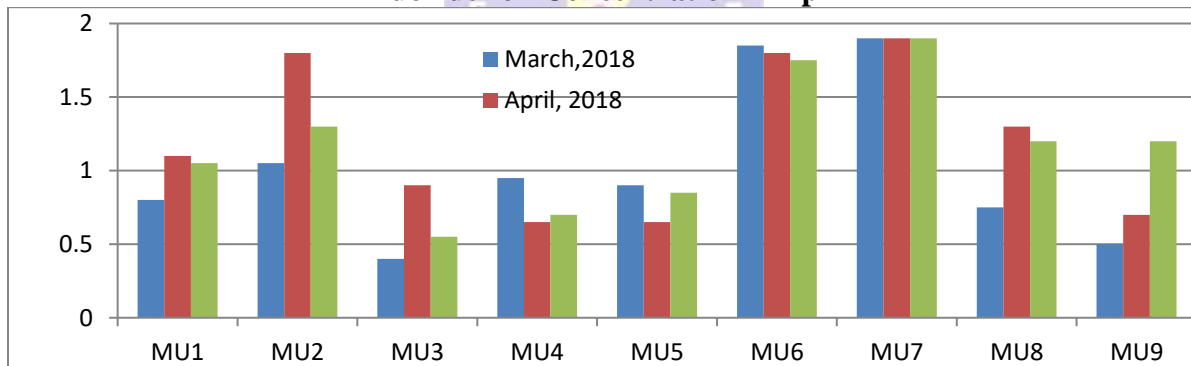


Fig.1 Fluoride Concentration

Conclusion: From figure 1, it is clear that concentration of fluoride at MU2 and MU6 and MU7 were higher than other selected sites and crossed the maximum contamination limit. At MU 6 and MU 7 results are expressing that continuous use of water from these site will cause serious effect caused by high fluoride contamination.

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