

ANALYSIS OF FLUORIDE CONCENTRATION AT KERAKAT 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 enter 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 0.3 to 1.8 ppm at different sampling stations of Kerakat Tehsil in Jaunpur district during September. 2018 to November, 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 Kerakat 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 [1]. 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 [2]. 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 Kerakat Tehsil, of Jaunpur district from September, 2018 to November, 2018 details of which are given in Table No.1

Tableno: 1 Details of Sampling Stations

S.No	Locality	Sampling Stations	Owner of the Bore-well
1.	Kerakat Tahsil	KKT1	Govt.
2.	Kerakat Railway Station	KKT2	Kamta Yadav
3.	Kali Mata Mandir	KKT3	Vishnu Pratap
4.	Udaychandpur	KKT4	Ghanshyam Saroj
5.	Sihauli	KKT5	Pradeep Tiwari
6.	Maniyara	KKT6	Dinesh Tiwari

7.	Abdullapur	KKT7	Monoj Gupta
8.	Saraibiru	KKT8	Suman Singh
9.	Girija Degree College	KKT9	Girija Degree College

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

RESULT AND DISCUSSIONS

The result of analysis of fluoride ion content of water samples of bore-wells of Kerakat regions of Jaunpur district are given in the Table 2. From the table the fluoride content ranges from 0.3 to 1.8 ppm at different sampling stations. In the present study fluoride concentration is found within the prescribed limit except KKT1 and KKT2. 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 [5-8].

Table No: 2 Fluoride Concentration of Different Bore Wells

S. No.	Sampling Stations	September -2018	October-2018	November-2018
1	KKT1	1.80	1.95	1.90
2	KKT2	1.90	1.89	1.37
3	KKT3	0.30	0.38	0.37
4	KKT4	0.58	0.59	0.67
5	KKT5	0.89	0.79	0.80
6	KKT6	1.43	0.99	1.21
7	KKT7	0.39	0.49	1.50
8	KKT8	0.69	1.84	1.30
9	KKT9	0.59	0.69	1.50

Fluoride Ion Concentration in PPM

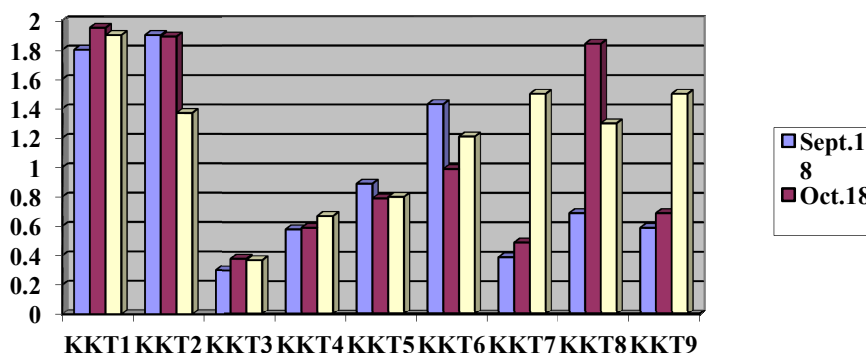


Figure 1: Fluoride Concentration.

CONCLUSIONS

From figure 1, it is clear that concentration of fluoride at KKT1 and KKT2 and KKT6, KKT8, KKT9 were higher than

other selected sites and crossed the maximum contamination limit. At KKT1 and KKT2 results are expressing that continuous use of water from these site will cause serious effect caused by high fluoride contamination.

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