



ASSESSMENT OF ARSENIC AND FLUORIDE IN THE BAKSA DISTRICT, ASSAM

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Abstract : Arsenic is a metalloid and it is highly toxic in its inorganic form. Long term contamination of Arsenic in water can cause cancer and Skin lesions. Fluoride is non metal and it is toxic if it present in water in excessive amount Fluoride present in ground water leads mottling of teeth, deformation of bones and joint pain in incapacitating people for all productive activities. The WHO has a guideline for As and F⁻ of drinking water is 0.05 mg/L and 1.5 mg/L respectively. To access both As and F⁻, Ten Sampling stations were selected in the Baksa district for Study. Both As and F⁻ parameter was analysed with appropriate and conventional method. It was found that the As and F⁻ are not exceeded the WHO guideline value in all the water samples. The water samples were analysed during sept, 2015 to May, 2016.

I. INTRODUCTION : The Baksa district is located between 26°25' north latitude and 26°48' north latitude, and between 90°55' and 91°46' east longitude. It has a humid-meso-thermal climate. Seasonal variations in rainfall are observed in the district. In every area of the district, the humidity is high and never drops below 75 percent.

The study area consists of mainly Tamulpur sub division and Mushalpur Sub division. The Selected villages of Tamulpur sub division are Patkijuli, Darranga, Paharpur, Kumarikata and Bherakhat and the selected villages of Mushalpur Sub Division are Dihira, Nikashi, Subankhata, Uttarkuchi and Moithabari.

II. REVIEW OF RELATED WORK:

Deka, P.K., and Sarma, C. (2006) have studied the physical and chemical parameters of some groundwater sources in the Bajali areas, Barpeta district. They found that the pH of water samples is alkaline in most cases. The mean value was 8.2, which prescribes the desirable limits of the pH range of drinking water by WHO (1984). The mean value of arsenic in groundwater in the Bajali area is 0.502 ppm, within the prescribed desirable limits by the WHO. Deka, D.K., and Talukdar, S. Dept. of Env. Science, Gauhati University (2008) studied drinking water quality characteristics in and around Nalbari town, Assam. They analyzed 10 water samples from different locations and showed the different parameter results as follows: pH is higher in the monsoon season than in the winter season. The iron content of water samples ranges from 0.33 mg/L to 1.18 mg/L in winter and 0.23 mg/L to 0.98 mg/L in monsoon season. Fluoride ranges are 1.31 mg/l. to 2.4 mg/L in the winter period and 1.01 mg/L. to 2.2 mg/L in the monsoon season.

III. Methodology

Water Samples were collected in a pre cleaned five-liter polythene Container. To avoid contact with air or agitation during transport the container was packed as tightly as possible and water Samples were collected from tube wells and ring wells in all cases. The Spectrophotometric method was used to examine the parameter 'Arsenic' and the photometric method was used to examine the parameter 'Fluoride' All the ten water samples were tested in the laboratory.

(IV) Result and Discussion :

Arsenic: The arsenic concentration was found below the detectable range in all the water Samples.

Fluoride : The range of F^- concentration of the water samples lies between BDL and 0.46mg/L. The fluoride concentration is below the permissible limits set by the WHO for all water samples.

Table (1) As and F⁻ analysed during winter season 2015.

Sampling Site	Source	As	F ⁻ mg/L ¹
Kumarikata	Tube Well	BDL	0.05
Bherakhat	Ring Well	BDL	0.05
Paharpur	Ring Well	BDL	BDL
Patkijuli	Ring Well	BDL	BDL
Darranga	Ring Well	BDL	BDL
Nikashi	Ring Well	BDL	0.03
Subankhata	Deep Tube Well	BDL	0.4
Dihira	Ring Well	BDL	.02
Uttarkuchi	Tube Well	BDL	.05
Moithabari	Tube Well	BDL	.03

(BDL = Below detectable Limit)

Table (2) : As and F⁻ analysed during post monsoon session : 2015

Sampling Site	Source	As	F ⁻ mg/L ¹
Kumarikata	Tube Well	BDL	0.27
Bherakhat	Ring Well	BDL	0.36
Paharpur	Ring Well	BDL	0.06
Patkijuli	Ring Well	BDL	0.36
Darranga	Ring Well	BDL	0.24
Nikashi	Ring Well	BDL	0.02
Subankhata	Deep Tube Well	BDL	0.46
Dihira	Ring Well	BDL	.05
Uttarkuchi	Tube Well	BDL	0.24
Moithabari	Tube Well	BDL	0.26

(BDL = Below detectable Limit)

Table (3) : As and F⁻ analysed during pre monsoon session : 2016

Sampling Site	Source	As	F ⁻ mg/L ¹
Kumarikata	Tube Well	BDL	0.07
Bherakhat	Ring Well	BDL	0.06
Paharpur	Ring Well	BDL	0.04
Patkijuli	Ring Well	BDL	0.05
Darranga	Ring Well	BDL	0.09
Nikashi	Ring Well	BDL	0.05
Subankhata	Deep Tube Well	BDL	0.43
Dihira	Ring Well	BDL	0.03
Uttarkuchi	Tube Well	BDL	0.21
Moithabari	Tube Well	BDL	0.16

(BDL = Below detectable Limit)

Conclusion : From the above study, it was seen that both AS and F⁻ were below detectable range as prescribed by WHO.

VI. REFERENCES

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