



ARSENIC AND FLUORIDE IN GROUND WATER OF SOME SCHOOLS OF JORHAT DISTRICT: AN ANALYSIS

Mridula Neog¹, Subhasis Kotoky², Dharmendra Dutta³, *Utpal Sadhoni⁴

^{1,4} Department of Chemistry, Kakojan College, Jorhat (Corresponding Author)⁴

² Department of Mathematics, Kakojan College, Jorhat

³ Department of Assamese, Kakojan College, Jorhat

ABSTRACT

Arsenic and fluoride are both ubiquitous in the environment. Thousands of people are suffering from the toxic effects of arsenicals and fluorides in many countries all over the world. These two elements are recognized worldwide as the most serious inorganic contaminants in drinking water. Ground water is an essential and vital component of our life support system. The ground water resources are being utilized for drinking, irrigation, and industrial purposes. Keeping in view of the above facts the present investigation was done for arsenic and fluoride of some schools of Jorhat district of Assam.

KEYWORDS: Arsenic, Fluoride, Groundwater, Jorhat, Assam.

INTRODUCTION

Adequate supply of fresh and clean drinking water is a basic need for all human beings, yet it has been observed that millions of people worldwide are deprived of these. Industrial growth, urbanization and the increasing use of synthetic organism substances have serious and adverse impact on fresh water bodies. In developing world perhaps as many as 2000 million people are without safe water supply and adequate sanitation.

Water is no doubt the most abundant, the most accessible and most studied of all the chemical compounds. The quality of water is important in terms of its physiochemical and chemical characteristics for domestic, industrial and agricultural uses. Keeping in view of the above facts the present investigation was done for arsenic and fluoride of some schools of Jorhat district of Assam.

1. Kakojan Govt. M.E. School.
2. Dihajan L.P. School.
3. Cheniamguri High School.
4. Jairam Patra L.P. School.
5. Kakojan Govt. Boys High School.

Health Effects of Arsenic Exposure:

Arsenicosis is a chronic illness resulting from drinking water with high levels of Arsenic over a long time. It is commonly known as Arsenic poisoning.

- Skin Cancer.
- Bladder Cancer.
- Lung Cancer.
- Neurobehavioral and Neuropathic effects.
- Effects of Memory and intellectual function.
- Cardiovascular disease.
- Respiratory system diseases.
- Effects on hormonal system.

Health Effects of Fluoride Exposure:

- Too much fluoride can lead to dental fluorosis or skeletal fluorosis, which can damage bones and joints.
- In some cases, excess fluoride can damage the parathyroid gland. This can result in hyperparathyroidism, which involves uncontrolled secretion of parathyroid hormones.
- Acne and other skin problems.
- Cardiovascular problems, including arteriosclerosis and arterial calcification, high blood pressure, myocardial damage, cardiac insufficiency and heart failure.
- Reproductive issues, such as lower fertility and early puberty in girls.
- Conditions affecting the joints and bones, such as osteoarthritis, bone cancer and temporomandibular joint disorder (TMJ)
- Neurological problems.

MATERIALS AND METHODS:

Determination of Arsenic:

Procedure:

1. 35 ml water samples measured in measuring cylinder and pour in the conical flask.
2. 5 ml Hcl (35%) added in the samples.
3. 2 ml KI solution added to each samples and waited for 2 mins.
4. Add 8 drops of stannous chloride to the contents and wait for 15 mins.
5. Meanwhile in 15 mins we prepare the following apparatus.
6. Scrubber, where we put (3-4) drops of lead acetate containing glass wool.
7. We take Arsenic tube and pour 5 ml SDDC (Silver Diethyl dithio carbamate) solution to each 5 arsenic tubes.
8. After 15 mins, we put Zinc granules in the conical flasks.
9. Put the scrubber and arsenic tube together and put in the mouth of the conical flasks and wait.

10. Reaction take place.
11. After 35 mins., we take out the SDDC solution and pour in the flask contain in 5 ml alcohol.
12. We put in the device.

Determination of Fluoride:

SPANDS Spectrophotometric Method:

1. Fluoride reacts with certain Zirconium dyes to form a colourless complex and another dye.
2. The dye becomes progressively lighter as fluoride concentration increase.
3. Absorbance is measured at 570 nm.
4. Read fluoride values for the samples.

RESULTS

Paramete	Permissible Limit
Arsenic	0.01 mg/lit
Fluoride	1.5 mg/ lit.

Table 1: Who guideline for Drinking Water (1993)

Name of the School	Arsenic	Fluoride
Kakojan Govt. M.E. School	0.006	0.1
Dihajan L.P. School	0.01	0
Cheniamguri High School	0.006	0.2
Jairam Patra L.P. School	0.001	0
Kakojan Govt. Boys' High School	0	0.11

Table: 2

CONCLUSION

According to WHO guide line for drinking water, the present investigation found that the Arsenic and Fluoride under permissible limit. The water of the above schools is safety for drinking. The value of Arsenic and Fluoride in the study of these schools exhibit normal behavior.

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