

ISSN-0379-1548

Government of the People's Republic of Bangladesh
Ministry of Power, Energy and Mineral Resources
Energy and Mineral Resources Division
Geological Survey of Bangladesh



Records
Of
The Geological Survey of Bangladesh

Volume-15

Part-3

**Determination of Iodine Content in Water and Soil of Gaibandha
Sadar, Saghata and Phulchhari Upazilla in Gaibandha District**

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October, 2014

Issued by the Director General, Geological Survey of Bangladesh
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ABSTRACT

Iodine is an essential element for human health. A certain amount of iodine is necessary to present in drinking water and daily food. Iodine deficiency causes many diseases, e.g goiter, cretinism, mental retardation, brain damage and retardation of intelligence etc. Gaibandha district is located in the northern part of Bangladesh. Many large and small rivers cross its territory and often flooded. During flood, surface of the soil mostly washes away and there may be a chance of elimination of minerals and trace element from the surface that are essential for human health. Now a day geology of the area is getting much importance to the scholar and researcher for various purposes. These were the causes to select some of the upazillas (Gaibandha Sadar, Saghata and Phulchhari) for the present study that are very adjacent to large river and the inhabitants are severely affected by Iodine Deficiency Diseases (IDD).

Samples were collected during field work from the selected points. Water samples were collected from that point from where local people often in their daily life collect water for drinking and irrigation purposes. Soil and crop samples were also collected from the area adjacent to water sampling. Forty one (41) representative samples from sixteen (16) stations were sent to laboratory for determination of iodine content and elemental analysis. Out of forty one (41) samples, twelve (12) were ground water samples collected by hand pump. There were also one sample of water from pond and four (4) from river. Twenty (20) soil samples and four (4) crop samples are also part of total 41 (forty one). pH, Conductivity and TDS (Total Dissolved Solid) has been measured immediately in the field. pH of water and soil were recorded which lies in the range $6.3 \approx 7.5$ and $5.47 \approx 7.49$ respectively. This value lies within the acceptable range of drinking water. It also indicates that water and soil under investigation are acidic to neutral in character. Concentration of iodine in water and soil sample were estimated and found within the level of $0.17\text{mg/L} \approx 5.75\text{mg/L}$, and $3.89\text{mg/Kg} \approx 12.45\text{mg/Kg}$ respectively. The findings testify the earlier findings of BGS and DPHE.

Heavy rain fall in the area under investigation dissolves the iodine that resides on the surface and slowly percolates beneath the earth and accumulate in the aquifer or drained to the pond or river. This may increases the iodine concentration in water sample decreasing in soil. Finding of the study indicates that concentration of soil iodine increases while water iodine concentration decreases and vice-versa. Increase of iodine concentration in soil follows the order **Phulchhari>Saghata>Gaibandha** whereas increase of water iodine concentration follows the reverse order i.e. **Gaibandha>Saghata>Phulchhari**. Increase or decrease curve of iodine in soil and water of three upazilla shows linearity in character. Ratio between soil to water iodine concentration also follows linearity. Influence of pH on iodine concentration of water and soil sample is remarkably noticed.