

of Naturally Occurring Radionuclides in Paleobeach Groundwater Aquifers in Cox's Bazar, Bangladesh, For Up To 3 Years: Insight into Formation Mechanism

Monitoring of geochemical groundwater parameters was carried out in twenty tubewells with depths ranging from 3 to 103m located in and around the Cox's Bazar paleobeach areas during the period of June 2012, June 2013 and May 2016. Results showed that radionuclides i.e., U and Th concentrations over the period of three years varied with fluctuation in pH and Eh. Concentrations of U (0.09-9.57 $\mu\text{g/l}$) and Th (0.02-127.09 $\mu\text{g/l}$) in 2013 were much greater than in 2012 (0.01-3.40 $\mu\text{g/l}$ for U and 0.002-1.59 $\mu\text{g/l}$ for Th). Likewise, slightly high values of Eh and pH were observed in 2013 (0.11-0.61V and 7.52-8.47) than in 2012 (0.26-0.47V and 6.56-8.30) respectively. Thereafter, samples in 2016 have lower concentrations of U (0.11-5.93 $\mu\text{g/l}$) and Th (0.01-8.33 $\mu\text{g/l}$) than in 2013; the values still slightly higher than those in 2012. Eh of 2016 samples was high (0.46-0.68V) and pH ranged from 6.40 to 7.67. A significant correlation of radionuclides contents with groundwater level, electrical conductivity and concentrations of Ca, Mg, Na, K, and Cl indicates influence of seawater. The trends and behavior of radionuclides contamination will assist in finding suitable methods and techniques for radionuclides remediation. Further study is required to evaluate the health consequences of radionuclides exposure to the groundwater-dependent communities.

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