

Distribution of Heavy Metals in Beach Water and Sediment of the Bay of Bengal Coast, Bangladesh

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The objectives of this research are to characterize the distribution of arsenic (As) including other heavy metals in water and sediment, types of coastal sediment in 3 coastal sites, i) located at Cox's Bazar, is the longest unbroken sea beach in the world, running 120 kilometres, ii) Patenga, a sea beach located 14 kilometres south of the port city of Chittagong, iii) St. Martin's Island, a small island (area only 8 km²) from watershed of the Bay of Bangle was investigated. In order to evaluate the occurrence of trace metals, sixty (60) sediment samples, thirty (30) seawater samples, were collected from the three coastal sites. The studied sediments show lower values (2.0-18.7 $\mu\text{g/L}$) indicating that the sediments are unpolluted. The As concentration in water samples (average = 8.57-34.7 $\mu\text{g/L}$) considered high. This research first investigated the water qualities and distribution pattern of rare-earth concentration in coastal sediment and water, providing a baseline in the Bay of Bengal, Bangladesh. We have, therefore, drawn new color maps for As, heavy metals and rare-earth using computerized software techniques as *Generic Mapping Tools* (GMT), *Ocean Data View* (ODV) and find the current geochemical pattern. This type of map may be used to establish general baselines against which more specific natural geochemical variations and human-induced perturbations can be appraised.

Keywords: Bay of Bangle, Arsenic (As), Rare-Earth, Sediment, Coastal Water

