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Spatial and multi-layered assessment of heavy metals in the sand of Cox's-Bazar beach of Bangladesh

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Abstract

This study presents the elemental abundances of beach sands collected from Cox's Bazar, Bangladesh for the purpose of understanding the spatial and layer-wise distribution of heavy elements and their provenance. Sand samples were collected from six different stations and from each sampling stations five samples were collected according to the sampling depth. Thus, in thirty sand samples, nineteen elements (Na, K, Sc, Cr, Fe, Co, Zn, As, La, Ce, Sm, Eu, Gd, Tb, Yb, Hf, Ta, Th and U) were determined by TRIGA Mark II research reactor based instrumental neutron activation analysis. Enrichment of some heavy metals, such as Fe, La, Ce, Sm, Hf, Ta, Th and U are due to the presence of some heavy minerals (i.g., monazite, magnetite, ilmenite). Study of environmental indices and the probable sources of anthropogenic origins indicate that the impact of anthropogenic heavy metals is negligible in our study area.

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