

Radium Equivalent and External Hazard Indices of Trace Elements Concentrations in Aquatic Species by Neutron Activation Analysis (NAA) and Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

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Abstract : Neutron Activation Analysis (NAA) and Inductively Coupled Plasma Mass Spectrometry (ICP-MS) were employed to analyze the level of trace elements concentrations in sediment samples and their bioaccumulation in some aquatic species selected randomly from surface water resources in the Northern peninsula of Malaysia. The NAA results of the sediment samples indicated a wide range in concentration of different elements were observed. Fe, K, and Na were found to have major concentration values that ranges between $61,000 \pm 1400$ to $4,500 \pm 100$ ppm, 20100 ± 1000 to 3100 ± 600 and $3,100 \pm 600$ and 200 ± 10 ppm, respectively. Traces of heavy metals with much more contamination health concern, such as Cr and As, were also identified in many of the samples analyzed. The average specific activities of ^{40}K , ^{232}Th and ^{226}Ra in soil and the corresponding radium equivalent activity and the external hazard index were all found to be lower than the maximum permissible limits (370 Bq kg^{-1} and 1).

Keywords : external hazard index, Neutron Activation Analysis, radium equivalent, trace elements concentrations

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