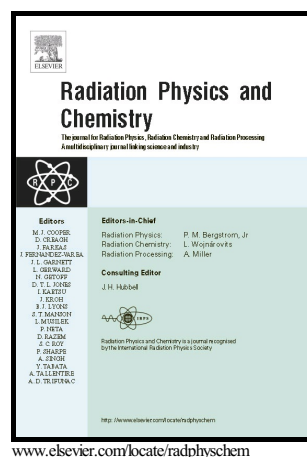


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**Mineralogy and physico-chemical parameters on the behavior of natural radionuclides in the riverine
environs of Hemavathi, South India**

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Abstract

Systematic studies were carried out to understand the influence of mineralogy and physico-chemical parameters on the behavior of natural radionuclides in the riverine environs of Hemavathi, one of the important rivers of South India. The physico-chemical parameters, granulometric content, magnetic susceptibility and mineral compositions were measured in the soil and sediment samples to understand the factors affecting the activity concentration of radionuclides in the river ecosystem. The mean activity of ^{226}Ra , ^{232}Th , and ^{40}K in the soil was found to be 37.65 Bq kg^{-1} , 36.79 Bq kg^{-1} , and $301.47 \text{ Bq kg}^{-1}$, respectively. The mean activity of ^{226}Ra , ^{232}Th , and ^{40}K in the sediment was 64.26 Bq kg^{-1} , $100.43 \text{ Bq kg}^{-1}$, and $379.02 \text{ Bq kg}^{-1}$, respectively. Elevated level of radionuclide concentration was observed in the sediment samples. In order to trace the source of the radionuclides, the mineral composition of the soil and the sediment was studied using FTIR and extinction coefficient of major minerals were calculated. Multivariate statistical analyses were carried out to determine the possible correlation between radionuclides, Physico-chemical parameters and the minerals. In particular, Magnetic susceptibility shows

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