2nd National Conference on Radiation Physics

15th – 16th December 2022

Book of Abstracts

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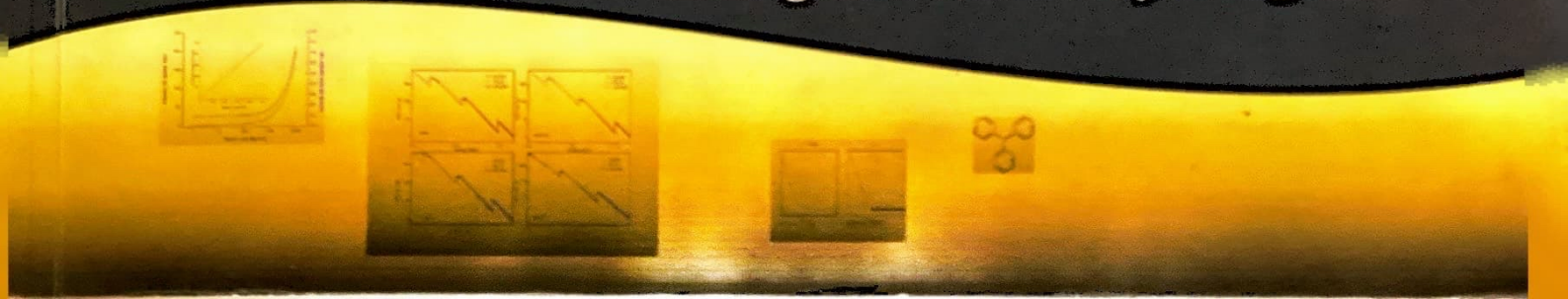

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ERM 14

Distribution of Uranium and ^{210}Po in groundwater of Kodagu District, Karnataka State, India

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Abstract

Naturally occurring radioactive elements are found in soil, rocks, water, and air which may easily enter human body by ingestion and inhalation. Uranium during the course of successive disintegration emanates alpha and beta radiations which is a matter of concern and ^{210}Po, is an important radionuclide in the Uranium decay series. The concentrations of these radionuclides vary depending on the geology. Ingestion of these radionuclides causes potential health risks due to their carcinogenic nature. The present work was to study the activity concentrations of Uranium and ^{210}Po in groundwater of Kodagu District, Karnataka State, India. The study area was divided into three sectors and eight zones for the purpose of analysis of data. The study area comprises of granites, gneisses, charnockites, and amphibolites forming a part of hard rock terrain. The concentration of Uranium and ^{210}Po in groundwater was estimated using a LASER fluorimeter and electrochemical deposition followed by alpha counting method respectively. The activity concentration of Uranium and ^{210}Po varied from 0.2 to 4.4 μgl^{-1} and 0.47 to 4.35 $mBql^{-1}$ respectively. The ingestion dose due to Uranium and ^{210}Po in groundwater varied from 0.16 to 3.58 $\mu Sv\ y^{-1}$ and 0.41 to 3.81 $\mu Sv\ y^{-1}$ respectively. The estimated Uranium activity is well below the standard safe limits of 30 μgl^{-1} in drinking water recommended by WHO and USEPA. Also, the ^{210}Po activity is very low compared to the recommended 100 $mBql^{-1}$ standards of WHO.

Keywords: Groundwater, Uranium, Polonium, Fluorimeter, Ingestion Dose.