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Radon Concentration in the Water Samples of Hassan District, Karnataka, India

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Abstract : Radon is a radioactive gas emitted from radium, a daughter product of uranium that occurs naturally in rocks and soil. Radon, together with its decay products, emits alpha particles that can damage lung tissue. The activity concentration of ²²²Ra has been analyzed in water samples collected from borewells and rivers in and around Hassan city, Karnataka State, India. The measurements were performed by Emanometry technique. The concentration of ²²²Rn in borewell waters varies from 18.49±1.89 to 397.26±12.3 Bql⁻¹ with geometric mean 120.48±12.87 Bql⁻¹ and in river waters it varies from 92.63±9.31 to 93.98±9.51 Bql⁻¹ with geometric mean of 93.16±9.33 Bql⁻¹. In the present study, the radon concentrations are higher in Adarshanagar and Viveka Nagar which are found to be 397.26±12.3 Bql⁻¹ and 325.78±32.56 Bql⁻¹. Most of the analysed samples show a ²²²Rn concentration more than 100 Bql⁻¹ and this can be attributed to the geology of the area where the ground waters are located, which is predominantly of granitic characteristic. The average inhalation dose and ingestion dose in the borewell water are found to be 0.405 and 0.033 µSvy⁻¹; and in river water it is found to be 0.234 and 0.019 µSvy⁻¹, respectively. The average total effective dose rate in borewell waters and river waters are found to be 0.433 and 0.253 µSvy⁻¹, which does not cause any health risk to the population of Hassan region.

Keywords : borewell, effective dose, emanometry, 222Rn
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