

## 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  $^{222}\text{Ra}$  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  $^{222}\text{Rn}$  in borewell waters varies from  $18.49 \pm 1.89$  to  $397.26 \pm 12.3$  Bq $^{-1}$  with geometric mean  $120.48 \pm 12.87$  Bq $^{-1}$  and in river waters it varies from  $92.63 \pm 9.31$  to  $93.98 \pm 9.51$  Bq $^{-1}$  with geometric mean of  $93.16 \pm 9.33$  Bq $^{-1}$ . In the present study, the radon concentrations are higher in Adarshanagar and Viveka Nagar which are found to be  $397.26 \pm 12.3$  Bq $^{-1}$  and  $325.78 \pm 32.56$  Bq $^{-1}$ . Most of the analysed samples show a  $^{222}\text{Rn}$  concentration more than 100 Bq $^{-1}$  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  $\mu\text{Sv}^{-1}$ ; and in river water it is found to be 0.234 and 0.019  $\mu\text{Sv}^{-1}$ , respectively. The average total effective dose rate in borewell waters and river waters are found to be 0.433 and 0.253  $\mu\text{Sv}^{-1}$ , which does not cause any health risk to the population of Hassan region.

**Keywords :** borewell, effective dose, emanometry,  $^{222}\text{Rn}$

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