

Effective Dose Radon 222 of the Tap Water in Children and Adults People; Minab City, Iran.

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Abstract

(222)Rn is a radioactive, odorless, and colorless element which has a half-life of 3.83 days. One of (222)Rn main resources are Groundwater (wells, springs, etc.). Hence, the use of groundwater with high concentration of (222)Rn can increase the risk of lung and stomach cancers.

Concentration of (222)Rn in tap water of Minab city in two temperatures 5 and 15 °C was measured by radon meter model RTM1668-2. The effective dose was calculated by equations proposed by UNSCEAR. Geometric mean concentration of (222)Rn in drinking water was found to be 0.78 ± 0.06 and 0.46 ± 0.04 Bq/l at 5 and 15°C (p value < 0.05), respectively. The effective doses were 0.006 and 0.003 mSv/y for adults, and 0.011 and 0.007 mSv/y for the children, respectively (p value < 0.05). Besides, the effective dose for adult through inhaling (222)Rn at 5 and 15°C were estimated 0.0021 and 0.0012 mSv/y, respectively. Geometric mean concentration in (222)Rn drinking water and effective dose received from drinking water and inhalation of (222)Rn is lower than WHO and EPA standard limits. Increasing temperature of drinking water will decrease the effective dose received. Annual Effective dose received from inhalation and consumption of (222)Rn in drinking water in children is more than adults.