

Radon concentration in drinking water sources of eastern part of Tehsil Banda Daud Shah, Southern Kohat Plateau, Khyber Pakhtunkhwa

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Abstract

Radon gas in drinking water sources of an area with high value is responsible for radiation related health effects, both through inhalation and ingestion. In this research 30 water samples from different sources including tube wells, hand pump and open wells in Tehsil Banda Daud Shah and adjoining area were analyzed with RAD7, Radon detector, for radon content determination. These water samples have a mean, highest and lowest radon value of 1.9, 2.52, and 1.38 Bq l⁻¹, respectively. Out of these drinking water samples 30 samples 25% were from tube wells, 10% were from springs, and 65% were from hand pumps. The total annual effective dose from radon in water because of its ingestion and inhalation per individual has likewise been estimated. The results have been compared with mean radon concentration and mean yearly effective dose of radon in water in previous investigation from different localities within and outside the country. During this study mean annual effective doses for ingestion (stomach), inhalation (lung) and whole body (ingestion plus inhalation) from drinking water sources of the Banda Daud Shah and surrounding area were found to be 0.00041 ± 0.00006 , 0.00469 ± 0.148 and 0.0041 ± 0.00074 , respectively. The whole annual effective dose of all samples are found to be lower than the recommended level of 0.1 mSv a⁻¹ for drinking water of WHO and EU Council.

It has been concluded from this study that water of the Banda Daud Shah and adjoining area is normally safe so far as radon related health hazard are concerned.