



A study on heavy radioactive pollution: Radon and Radium in streams and drinking water of Ramsar region by measured Prassi system

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Abstract

Inhalation of radon gas ^{222}Rn , which is a decay product of ^{226}Ra , and its decay products accounts for typically about half of the effective doses received by public from all natural sources of ionizing radiation. Radon alpha particles can initiate a series of molecular and cellular events that culminates in the development of lung and other cancers. Also, ^{226}Ra in the environment is widely distributed, being present in various concentrations in waters, soils and rocks. When radium is ingested, the majority of material is rapidly excreted. However, since radium is chemically similar to calcium, a significant fraction is absorbed into the bloodstream and deposited mainly in the skeleton. So, presence of these radioactive contaminants in water is dangerous and many studies especially about radon have been done in this area. For these reasons and because some areas of Ramsar, a city in northern Iran in mazandaran province, have been among the highest known background radiation levels in the world we measured radon and radium concentrations in water sources of Ramsar region. In this study, Radon and radium concentrations of the 22 streams and 20 drinking water samples were measured by PRASSI system. According to the data, the arithmetic mean of radon concentration for all samples was 3.030 ± 1.122 Bq/l. Similarly, arithmetic mean of radium for all samples was 0.185 ± 0.055 Bq/l. Also 1 sample of streams and 1 sample of drinking water showed radon concentration higher than 10Bq/l as normal level. Radium-226 alone, in 11 samples of streams and 8 samples of drinking water had concentrations higher than 0.185Bq/l as normal level for the combined Radium-226 and Radium-228.

Keywords: drinkable water, stream, Radon, Radium, Prassi system

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