

Measurement of Radon Concentration of Air Samples and Estimating Radiation Dose from Radon in SARI Province

Seyed Ali Rahimi, Behzad Nikpour

Faculty of Health, Mazandaran University of Medical Sciences, Kilometer 18 KHAZARABAD Road, SARI, IRAN

Abstract: Radon is a radioactive material. This gas is colorless, tasteless, odorless, and its main source element radioactive uranium-238 (^{238}U). It has been recognized that the source of half the human dose, radon gas is present in the environment. Radon is a radioactive substance is carcinogenic and should always be careful and it worked perfectly. Since this element is emitting alpha particles also it is very dangerous to inhale a mist of decomposition products formed easily into the air and stick to lung tissue. It is hard to focus on one part of it. In this study to measure radon in homes in the province of Sari dosimeters DOSEman SARAD GmbH company in Germany that are sensitive to alpha particles were used. Population of the city of Sari 495,369 people, and the urban population of the village of forty to sixty is the degree of concentration of 116.5 people per square kilometer. A percentage of the total household population of Sari in areas geographically different samples are selected (2600 times according to the latest population census sample data Sari city). Measuring radon in four different seasons in a year at home for sampling was done. Sensors 60-minute room bedroom or living at an altitude of 50 to 90 cm from the floor, away from windows and sunlight placed. How dose rate and radon gas in homes has been measured. The amount of radon in your home in Spring 28.615Bq m^{-3} , in summer 27.20Bq m^{-3} , in the autumn 27.07Bq m^{-3} in winter 36.95Bq m^{-3} measure. Both dose levels in spring $0.0032\text{ }\mu\text{Sv}$, in the summer $0.026\text{ }\mu\text{Sv}$, in the autumn $0.037\text{ }\mu\text{Sv}$ in winter $0.056\text{ }\mu\text{Sv}$ is measured. Annual dose equivalent to approximately $0.0151\text{ }\mu\text{Sv / year}$. Radon measurement results show that the average radon concentration is higher in winter than other seasons. The same dose in the winter than the other seasons. This difference could be due to lack of air movement and stillness, and the dose of radon indoors in the winter.

Keywords: Natural Radioactivity, Radon, Lung Cancer, Radiation Dose, SARI province