

Exhalation Rate Study of Radon in Some Building Materials Samples by Using Polymeric Nuclear Track Detector LR-115 Type II

H.Bakr

Department of Physics, College of Education, University of Basrah, Basrah, Iraq.

ABSTRACT:

Accurate knowledge of exhalation rate plays an important role in the characterization of radon source strength in building materials and soil. Indoor radon has been recognized as one of the health hazards for mankind. Measurement of radon exhalation rates for selecting samples of common building materials used for construction of houses in Basrah city (south of Iraq) which are considered as major sources of indoor environment, are carried out by using a passive measuring technique. In the passive method, LR-115 type II polymer nuclear track detectors with "can" technique were applied. These containers were hermetically sealed and stored for (90) days to obtain equilibrium between ^{222}Rn and ^{226}Ra . After exposure to radon, LR-115 type II polymeric detectors are etched in 2.5N of NaOH at $(60 \pm 1)^\circ\text{C}$ for 2hrs. and from the measured radon concentration values, the ^{222}Rn exhalation rates are measured. Exhalation rates for radon has been found to be varying from a minimum value of $1.19 \times 10^{-5} \text{ Bq Kg}^{-1} \text{ hr}^{-1}$ for cheer-stone (Basrah), to a maximum value $11.44 \times 10^{-5} \text{ Bq Kg}^{-1} \text{ hr}^{-1}$ for brick (Emarah). Interpretation of these values has been explained in term of different construction nature of each material.