Seasonal variation of indoor radon concentration in a desert climate


PII: S0969-8043(17)30519-5
DOI: http://dx.doi.org/10.1016/j.apradiso.2017.08.017
Reference: ARI8035

To appear in: Applied Radiation and Isotopes

Received date: 8 April 2017
Revised date: 3 August 2017
Accepted date: 11 August 2017


This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
Seasonal variation of indoor radon concentration in a desert climate

H.M. Al-Khateeb*,a, M. Nuseiratb, K. Aljarrahb,c, M-Ali. H. Al-Akhras,a, H. Bani-Salamehb

*aDepartment of Physics, Jordan University of Science and Technology (JUST), P. O. Box 3030, Irbid 22110, Jordan.
bDepartment of Basic Sciences, College of Science and Health Profession, King Saud Bin Abdulaziz University for Health Sciences (KSAUHS), P. O. Box 22490, Riyadh 11426, Saudi Arabia.
cKing Saud Bin Abdulaziz University for Health Sciences (KSAU-HS), Al Ahsa, Saudi Arabia
*Corresponding Author: HMA (email address: hkhateeb@just.edu.jo. This work has been accomplished during his scientific sabbatical leave at KSAUHS.

Abstract

Radon is one of the sources that negatively affect dwellings air quality and is ranked as a main cause of lung cancer after cigarette smoking. The indoor radon concentrations usually affected by the conditions of the environment surrounding the dwellings. Seasonal variations can have a significant impact on the indoor radon concentrations. In this article, we studied the seasonal variations of indoor radon concentration in a desert climate, particularly in gulf countries that usually leave the windows and doors closed all over the time. Four hundred dosimeters containing CR-39 detectors were planted for three months to measure the variation in radon concentration between winter and summer seasons. Our measurements showed that a building with a basement revealed a significant variation between radon concentration in winter (44.3±3.1 Bq m⁻³) and in summer (26.1±1.7 Bq m⁻³). Buildings without basements showed that the indoor radon concentration in winter (16.1±1.7 Bq m⁻³) is very much close to that in summer (16.7±1.8 Bq m⁻³). Our results indicated that seasonal variations can significantly affect indoor radon concentration for buildings established with basements. However; in the study region, the average indoor radon concentration as well as the annual effective dose rate are found to be below the action level recommended by ICRP.

Keywords: Radon concentration; Desert climate; Seasonal radon variation; Effective dose rate.
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات