

# Abstract

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## **Seasonal variation of indoor radon concentration in dwellings of Alexandria city, Egypt.**

Inhalation of radon ( $^{222}\text{Rn}$ ) and its daughter products are a major source of natural radiation exposure. Keeping this in view, seasonal indoor radon measurement studies have been carried out in 68 dwellings belonging to 17 residential areas in Alexandria city, Egypt. LR-115 Type 2 films were exposed for four seasons of 3 months each covering a period of 1 y for the measurement of indoor radon levels. Assuming an indoor occupancy factor of 0.8 and a factor of 0.4 for the equilibrium factor of radon indoors, it was found that the estimated annual average indoor radon concentration in the houses surveyed ranged from  $45 \pm 8$  to  $90 \pm 13$  Bq  $\text{m}^{-3}$  with an overall average value of  $65 \pm 10$  Bq  $\text{m}^{-3}$ . The observed annual average values are greater than the world average of 40 Bq  $\text{m}^{-3}$ . Seasonal variation of indoor radon shows that maximum radon concentrations were observed in the winter season, whereas minimum levels were observed in the summer season. The season/annual ratios for different type of dwellings varied from 1.54 to 2.50. The mean annual estimated effective dose received by the residents of the studied area was estimated to be 1.10 mSv. The annual estimated effective dose is less than the recommended action level (3–10 mSv  $\text{y}^{-1}$ ).