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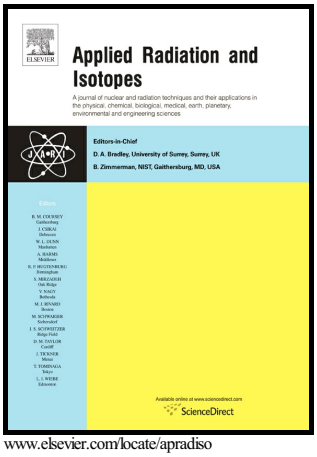

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Inhalation dose due to Rn-222, Rn-220 and their progeny in indoor environments

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Radon (Rn-222), thoron (Rn-220) and its progeny are the natural radioactive gases emitted everywhere in different concentration. These carcinogenic substances were known to be responsible for lung cancer. Human exposure of these gases in an indoor environment was principally dependent on the house types like concrete, slate, mud-tin etc. Rate of exposure is also influenced by unplanned construction and associated poor ventilation.The study of inhalation dose with house type and the associated indoor environment were important to study the exposure due to natural ionising radiation.In this study, we report the results from passive measurement of indoor radon, thoron and their progeny concentrations in Bilaspur district of Himachal Pradesh, India. The measurement was performed at selected 95 dwellings, based on outdoor ambient gamma level and type of houses. Highest inhalation dose due to indoor radon, thoron and their progeny were found in mud houses in comparison to other concrete, slate and tin type of houses. The average annual inhalation dose thus found due to exposure to radon and thoron varies from 0.1 to 0.5mSv/y in the concrete, 0.3 to 0.6 in mud and slate type of houses whereas 0.1 to 0.4 in mud-tin type. The estimated average value of radon, thoron and their progeny concentrations were used to estimate total annual inhalation dose.

Keywords: ventilation; construction; inhalation dose; ionising radiation; indoor radon