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Design of a national indoor radon survey for South African Homes: review of existing indoor radon concentration data and associated measurement techniques

Radon ^{222}Rn is a natural radioactive gas directly produced from the decay of Radium, ^{226}Ra found in rocks and soil. Since radon is a gas, it can move freely through the soil allowing it to escape into the atmosphere or flow into buildings. South Africa is facing the challenge in mine dumps which contribute radon exposure to the public. The World Health Organization (WHO) and the International Atomic Energy Agency (IAEA) studies have shown that elevated radon-in-air levels are associated with an increased risk of developing lung cancer. Over the years surveys of indoor radon levels were performed in Asia, Europe, America, and Canada which include several countries. In 2018 the Centre for Nuclear Safety and Security (CNSS) in South Africa, initiated a project call to design a national indoor radon survey in South Africa. Stellenbosch University was successful in getting funding to execute this project. Here we report on results from our desktop-based survey of existing indoor radon levels for South Africa. We present an initial statistical analysis of the data and use the data to investigate the notion that the radon level in homes follows a lognormal distribution. We also present a summary of radon measurement techniques used to date.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

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