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# Advances in radon research and protection in Cameroon

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Indoor radon measurements started in Cameroon since 2012 by measuring 222Rn using the Electret Ionization chambers (EIC) in about 500 dwellings of some ore bearing areas, followed by the discriminative measurements of 222Rn and 220Rn in 450 dwellings using RADUET detectors in some mining and ore bearing areas of Cameroon. The collected data helped to build a Technical Cooperation Project with the International Atomic Energy Agency (IAEA) on establishing a national radon plan for controlling public exposure due to radon indoors. A total of 1500 RADTRAK detectors to measure 222Rn were deployed in the whole country, collected and analyzed. The results of indoor radon measurements and inhalation dose assessment showed the importance to put in place radon regulation and national radon action plan. Radon regulation was drafted and the national radon action plan adopted in October 2020. The priority tasks for 2022-2025 are radon-risk mapping, radon mitigation, radon-risk communication and the integration of radon issue in the training of building professionals.

222Rn, 220Rn and 220Rn progeny measurements confirmed the importance to consider 220Rn in dose assessment to avoid biased results in epidemiological study. At the international scale, reference levels should be defined for 220Rn as done for 222Rn some decades ago. Effective dose due to 220Rn determined from the equilibrium factor is unreliable. Therefore, the risk of public exposure due to 220Rn and its progeny may therefore be higher than that of 222Rn and its progeny in many parts of the world if the equilibrium factor of 220Rn is no longer used in estimating total effective dose. It is therefore important to directly measure 222Rn and 220Rn progenies for a correct estimate of effective dose.

Uncertainty assessment in biokinetic and dosimetric models of α, β, αγ, βγ -emitters for ingestion and inhalation dose coefficients was carried out followed by the determination of the inhalation dose coefficients of 219Rn progeny, stemming from the disintegration of 223Ra used in nuclear medicine to treat bone metastasis due to prostate cancer.

**Primary author:** -, Saïdou (Research Centre for Nuclear Science and Technology)

**Presenter:** -, Saïdou (Research Centre for Nuclear Science and Technology)

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