10th International Conference on High Level Environmental Radiation Areas (ICHLERA 2022)



ID de Contribution: 142

Type: ORAL

Good RAD7 performance for high radon levels

mardi 28 juin 2022 11:15 (15 minutes)

Good RAD7 performance for high radon levels

Miguel Balcazar1, Arturo Lopez-Martinez 1

1Instituto Nacional de Investigaciones Nucleares Carretera Mexico Toluca S/N, La Marquesa, 52750 Ocoyoacac, Mex. Mexico.

Email: miguel.balcazar@inin.gob.mx

Topic : Environmental Monitoring & Dose Assessment

Type of presentation: POSTER

Abstract

A good performance of six RAD7 electronic devices was confirmed for detecting a wide range of Radon concentrations (32 to 280,000) Bq m-3, in air, soil and water. Two types of experiments were performed. Firstly the RAD7 detectors were tested in the laboratory using a high radon source from a confined uranium mineral inside a small sealed container, from which radon is diluted to other experimental chambers of different sizes. Evaluation of each radon concentration in the experimental chambers is achieved by means of a Ge (Hp) detector. In accordance with the reported sensitivity by the manufacturer of 0.4 cpm/PCi/L, a general expression was derived which permits to set criteria for choosing the expected counting errors in terms of time-counting intervals and radon concentrations. Secondly, the RAD7 performance was successful tested in a uranium mine under high environmental properties; where radon concentrations in air was up to 93 kBq m-3 and up to 285 kBq m-3 in soil. Short time-counting intervals of 5 minutes were chosen because the relative humidity inside the detector nearly reached values above 20% that may reduces the efficiency of the detector and increase the risk of damage it; temperature was also extreme slightly above 40 °C.

Auteur principal: Prof. BALCAZAR, Miguel (Instituto Nacional de Investigaciones Nucleares)
Co-auteur: LOPEZ MARTINEZ, Arturo (Instituto Nacional de Investigaciones Nucleares)
Orateur: Prof. BALCAZAR, Miguel (Instituto Nacional de Investigaciones Nucleares)
Classification de Session: NORM & TENORM