

of Radioargon and Radioxenon in Soil Gas

The most important indicators for a UNE during an OSI are the radioactive xenon isotopes Xe-131m, Xe-133 and Xe-133m and the radioactive argon isotope Ar-37. In the assessment of a detection of these nuclides it is important to have knowledge about the levels that can be expected due to the natural background. Therefore, it is interesting to simultaneously measure the background levels of radioxenon and radioargon in soil gas for a better understanding of the relationship between them. Sub soil sampling has been carried out on the oil shale ash waste pile in Kvarntorp, Sweden, a location with known elevated uranium content. The results from analyzing these samples will be presented along with a discussion of production rates of radionuclides in the subsurface including Rn-222. Correlations between them and the gas composition (i.e. CO₂, O₂) indicate the relative importance of fission reactions, cosmogenic production and mixing.

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