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Temperature effects on emanation of radon from rock to water and on its partition between water and air

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Emanation of radon (^{222}Rn) from rock and partition of radon between water and air are important parameters, so its evaluation is of significance in the study of radiation protection, environmental geochemistry, climate change and so on. In this study, emanation of radon from rock particles (1-2 mm) to water and partition of radon between water and air by temperature of 0, 10 and 20 °C have been determined using an equilibration partitioning in a closed system (EPICS) method. Specific activity of radon in the rock particles used here were 4.990 ± 20 Bq/kg. The results show that emanation of radon from rock and partition of radon on air increase with increasing the system temperature, however partition of radon on water slightly decreases with increasing temperature. In conclusion, radon emanation from bed rock or soil and partition of radon between water and air is controlled by temperature change, which in turn is also governed by climate change.

Primary author: Dr LEE, Kil Yong (Korea Institute of Geoscience and Mineral Resources)

Co-authors: Dr KO, Kyung Seok (Korea Institute of Geoscience and Mineral Resources); Dr YOON, Yoon Yeol (Korea Institute of Geoscience and Mineral Resources)

Presenter: Dr LEE, Kil Yong (Korea Institute of Geoscience and Mineral Resources)

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