Radon monitoring in Domica cave

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A b s t r a c t: Radon (^{222}Rn) is among natural radionuclides the major source of ionizing radiation. Radon and its short-lived progenies 218Po, 214Bi, 214Pb and 214Po are the most important contributors to human exposure from natural sources (UNSCEAR, 2000). Monitoring of radon activity concentration in the cave atmosphere is performed mainly due to assess the radiological hazards to occupational workers and occasional visitors. On the other hand, radon is used as a natural radioactive tracer of air movement in caves in microclimate research. Elevated radon activity concentrations exceeding an intervention level of 1000 Bq/m^3 (ICRP, 1994) may be found in the air of karst caves with poor ventilation, in spite of the radioactive elements' content in host rock is usually low. In Slovak Republic, 12 caves are open to the public. Some of them are equipped with the station for the continual microclimatic, hydrological and hydrochemical monitoring, and with the external meteorological station (Gažík et al., 2009). Radon monitoring in Domica show cave (Slovak Karst National Park) have been performed from June 2010

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(Smetanová et al., 2010). Data are recorded continuously at 10 min intervals. Measured values ranged from 90 to 4740 Bq/m^3. Seasonal, short-term as well as daily changes of radon activity concentration have been observed. Seasonal trend is characterized by the higher radon concentration in summer and lower during the winter months. Diurnal variations were not observed from December to February. Short-term variations were mostly registered from August to November.

Key words: radon, cave, variations

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