

Measurement of Radon Potential from Soil Using a Special Method of Sampling

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Abstract

Soil radon gas and/or its exhalation rate are used as indicators for some applications, such as uranium exploration, indoor radon concentration, seismic activity, location of subsurface faults, etc., and also in the studies where the main interest is the field verification of radon transport models.

This work proposes a versatile method for the soil radon sampling using a special manner of pumping. The soil gas is passed through a column of charcoal by using passive pumping. A plastic bottle filled with water is coupled to an activated charcoal column and the flow of water through an adjustable hole made at the bottom of bottle assures a controlled gas flow from the soil. The results obtained for the activity of activated charcoal are in the range of 20-40 kBq/m³, for a depth of approximately 0.8 m. The results obtained by this method were confirmed by simultaneous measurements using LUK 3C device for soil radon measurements. Possible applications for the estimation of radon soil potential are discussed.

Key words: radon, radon soil potential, activated charcoal, gas extraction.