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HUMIDITY AS AN IMPORTANT PARAMETER FOR THE MEASUREMENT OF RADON AND THORON IN SOIL USING ETCH-TRACK DETECTORS

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Humidity is one of the main problems for radon measurement in soil. Test for application of Radopot and Raduet (commercially available from Radosys Company, Hungary) detectors in humid environment was done at NIRS because Radopot detector has been used for indoor radon/thoron measurements under normal conditions (temperature and humidity) so far [1, 2].

The experiment consisted of two parts: the laboratory and *in-situ*.

During the laboratory part these detectors were exposed in radon and thoron chambers under well controlled values of concentration, humidity and temperature. As a result the information about humidity influence for calibration factor was obtained.

In the case of *in-situ* part two groups of detectors were exposed to soil gas during about one week in the same 3 boreholes of 50 cm depth (repeated 6 times). The first group was sealed using humidity proof bag whereas the other was not sealed. Additionally, humidity and temperature in the borehole were recorded. As a result the ratio of sealed/not sealed detectors was obtained.

In the case of thoron, the situation is more complicated because thoron is not observed if detector is put into the humidity proof bag.

Ref.

[1] Kim C, Kim Y, Lee H, Chang B, Tokonami S. *Rn-220 and its progeny in dwellings of Korea.* RADIATION MEASUREMENTS 2007; 42: 1409-1414.

[2] Yamada Y, Sun Q, Tokonami S, Akiba S, Zhou W, Hou C, et al. *Radon-thoron discriminative measurements in Gansu province, China, and their implication for dose estimates.* JOURNAL OF TOXICOLOGY AND ENVIRONMENTAL HEALTH-PART A-CURRENT ISSUES 2006; 69: 723-734.