

Relationship between outdoor radon concentrations and meteorological parameters

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In order to establish radon levels in outdoor atmosphere radon measurements were performed during the fifteen days by alpha spectrometric measuring method with detector Airthings Corentium Home. Measuring point was at 0.5 m height. Since meteorological conditions can have a significant impact on radon measurements, parameters such as temperature, humidity, precipitation, wind speed were also noted by SENCOR SWS 9700. The results of short term outdoor radon concentration were read out daily and varied from 4 Bq/m³ to 23 Bq/m³ (values were averaged from hour to hour), until values of long term measurements (averaged daily) varied from 13 Bq/m³ to 21 Bq/m³. Average outdoor radon value strived to 15 Bq/m³. During the measurements temperature ranged from 7.1-16.5°C, humidity varied from 62-95%, barometric pressure had a span from 710.6-753.2 mmHg. A weak correlation was found between outdoor radon levels and temperature ($r=0.312$). No correlation was found between outdoor radon levels and other meteorological parameters like humidity and pressure. The highest value of short term radon activity concentration was noted in a day with the lowest temperature, and highest humidity (and during the precipitation). Since precipitation presents a barrier to radon penetration through soil pores, at relatively high humidity the concentration of radioactive aerosols in the ground air layers are higher than radon concentration.