INDOOR RADON LEVELS CHANGING YEAR BY YEAR

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Short-term fluctuations of the indoor radon concentration may occur in time due to weather conditions, seismic activity etc. These average out during the year therefore they are not relevant e.g. for long-term dose assessment at the study of cancer risk of low doses. According to our measurements, the yearly average of radon concentrations may also change in the very same room by 25--50% from year to year. This experience makes comparison of data obtained for different houses in different years unjustified, large-scale "radon maps" based upon such incoherent data are unreliable.

In this study possible causes of such year-by-year changes are investigated empirically, based upon seasonal registration of activity concentrations through 5 to 7 consecutive years. The possible causes of these long-term changes are discussed: precipitation, soil moisture, frozen soil, frequency of windy days due to air pressure drops etc. Most significant effect is the stark anti-correlation between indoor radon concentration and precipitation (soil moisture) at ground floor in village houses. Differences between wet and dry years, between cold and mild winters are clearly manifested, resulting in dose differences up to 0.5 mSv between consecutive years. These conclusions may be relevant to foresee long-term tendencies, implied by climatic shifts and changing living habits.