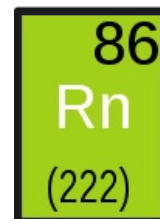


Health issues related to radon

In particular, we monitor the amount of **radon (^{222}Rn)** in the indoor environment. Radon is a colourless, heavier-than-air, tasteless, odourless, radioactive gas (produced during the 1st uranium-radium decay series). It enters houses from:

- bedrock,
- building materials,
- groundwater (an insignificant source),
- natural gas.



Radon

Sources and dissemination

The largest source is the subsoil, it enters the soil air (we evaluate the concentration) and with it into buildings due to the so-called **community effect** (negative pressure).

The half-life of ^{222}Rn is less than 4 days, which is sufficient to get it into a building. However, the radiation dose from radon is much lower than the dose from its daughter products: **α isotopes of polonium** (^{210}Po , ^{214}Po). Therefore, the so-called *equivalent volume activity of radon* is used to evaluate the volumetric activity of radon daughter products in the air.

The amount of radon in building materials varies depending on their origin. Today, these are mostly materials produced from power plant ash, where the Rn content varies according to the type of coal burned.

Rn and, more often, its daughter products reach the lungs adsorbed on the respirable fraction of the aerosol (particle size 3 μg), in lungs the action of α short-range radiation.

The risk of Rn increases with other risk factors such as smoking or mold.

Prevention

The mass (specific) activity of ^{226}Ra should not exceed 120 Bq/kg in the building material. Buildings with higher α -activity need to be investigated to find the source of Rn. It is necessary to modify the foundations, insulate the living space, prevent the penetration of soil air into the building, Rn can also be ventilated.

Radon exposure measurement

For measurements we use radiation detectors α . Houses can also have γ and β radiation – they are not measured (activities usually do not reach risk values).



„Radon test kit“

Links

References

- BENCKO, Vladimír, et al. *Hygiena : učební texty k seminářům a praktickým cvičením*. 2. edition. Praha : Karolinum, 2002. 185 pp. ISBN 80-7184-551-5.