

2009-09-15

New recommendations for radon in dwellings in the Nordic countries

Radon down to low levels poses a risk for lung cancer. Remedial measures and radon prevention in new building should be promoted to bring the radon level indoors as low as reasonably achievable according to new recommendations from the Nordic radiation authorities.

About 1300 Nordic citizens die from lung cancer annually due to exposure to radon gas in the indoor environment. This represents about 10 percent of the total number of lung cancer deaths in the Nordic countries.

Radon concentrations measured in dwellings located in Nordic countries are among the highest in the world. In Sweden the estimated number of dwellings exceeding 200 Bq/m³ is about 450 000; in Finland more than 200 000; in Denmark about 65 000 and in Norway 170 000. In Iceland it is estimated that no dwellings have radon levels above 200 Bq/m³ due to the Icelandic bedrock being primarily composed of basalt.

New studies confirm that almost two thirds (63 percent) of the lung cancer deaths attributed to radon occur among people exposed to less than 200 Bq/m³ – a level under which earlier no measures were recommended. Calculations now show that if all dwellings with radon concentrations exceeding 200 Bq/m³ in the Nordic countries had the radon levels reduced to 100 Bq/m³, 360 lung cancer deaths could be avoided each year.

The Nordic radiation authorities now make a joint recommendation on prevention and mitigation of radon dwellings. The recommendation states that

- The most cost-effective way to reduce the average radon level in a long time perspective is to assure that the radon concentrations in all new buildings are low. New buildings should therefore be planned and constructed in such a way that the annual average radon concentration will be as low as reasonably achievable, in accordance with national building codes.
- Remedial measures in existing dwellings should be promoted with the aim of bringing the radon level in the indoor air down as low as reasonably achievable. If the radon concentration exceeds the national upper recommended reference level, remedial measures should be taken to reduce radon levels, preferably to a level below 100 Bq/m³.

- Decision for remedial measures should be based on long-term measurements; the duration should be at least two months during the heating season.
- For successful prevention and remediation of radon problems, the general public needs correct information and guidance about the issue. It is therefore important that education and training are provided to all personnel and officials working with radon.

Smoking increases the risk of developing lung cancer by a factor of 25 and most of the radon-induced lung cancer cases have been identified among smokers. Still, also for non-smokers, health risk should not be underestimated.