

Radon in your home

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Pollution

Radon is a naturally occurring, radioactive gas in the underground that penetrates buildings through leaks (cracks, fissures, pipe penetrations, etc.) in the foundation. The level of radon depends on how much radon there is in the underground below the building, whether the foundation is tight and how great the air exchange is in the building - especially in the building's lower floor.

Radon is rarely a problem in apartments in apartment buildings with a basement, whereas radon can be a particular problem in houses without a basement, or in homes where the basement is used for living. The health risk is greatest if there are high concentrations in bedrooms, living rooms, etc.

The lowest concentrations of radon are not necessarily found in newer, radon-protected buildings with mechanical ventilation. In older buildings, equally low or lower concentrations can be found. This may be because older buildings have denser foundations or more leaky climate screens, which gives high air exchange as exists in new buildings with mechanical ventilation. Likewise, mechanical ventilation and cooker hoods can - under certain conditions - increase the radon concentration by creating a negative pressure, so that radon is sucked inside via the leaks in the foundation (e.g., pipe penetrations in technical rooms), which can create high concentrations in both new and old buildings.

Make your own measurements

If you often stay in the basement - or your house does not have a basement - you should have the radon content measured with radon boxes over a 60–90-day period during the heating season, while the building is used normally. It costs 65-70 euros. You should measure in rooms where you spend most of your time, e.g., bedrooms and living rooms - or hobby rooms in the basement that you use often.

Alternatively, you can **buy an electronic radon meter**. It costs around 135 euros. Then you can monitor the radon content in different rooms of the house yourself. The good thing about an electronic radon meter is that you can investigate on what effectively reduces the radon content in your home, and what fits best into your everyday life and your habits. You can thus start by implementing the easiest and cheapest measures (described on the next page) and see if it solves the problem before you embark on the more expensive and difficult measures. However, you should know that the radon level varies greatly seasonally, how the home is used, and weather conditions. It is therefore necessary to measure for longer periods (e.g. a month's time) in the same season to draw clear conclusions.

Radioactive radiation is measured in becquerels (Bq), where one Bq corresponds to one radioactive decay per second. The lower limit value for radon in Denmark is 100 Bq/m³, while the upper limit is 200 Bq/m³. When the lower limit value is exceeded, simple measures should be initiated such as increased aeration and sealing of the foundation. If the upper limit value is exceeded, more comprehensive measures must be taken (in addition to the simple ones). E.g., a tight membrane can be implemented on the inside of the foundation, or a radon extraction system, whereby the radon-containing air under the foundation is led up through a pipe with discharge along the roof. You can read more about various measures below.

What to do?

You can do a lot yourself, but several of the suggestions below require you to involve professionals.

1) In general, if you use the lower floor of the house as a bedroom or living room

- Measure the radon concentration in the bedroom or living room if this has not yet been done.
- Aerate often with draughts and, if possible, leave windows in the aeration position in the summer.
- Establish and use mechanical ventilation that does not produce negative pressure if possible.
- Ensure pressure equalisation (open ventilation damper/window ajar) when using a cooker hood.
- Keep the door to the basement closed and ensure that the door closes tightly - preferably apply sealing strips.
- Never use the basement for living in.

2) The lower limit value of 100 Bq/m³ is exceeded

- Carry out simple sealing of cracks, fissures, and pipe penetrations in the foundation.
- Adjust the mechanical ventilation so that it is balanced and does not create negative pressure in the building.
- Avoid prolonged (over 2 hours a day) stays in rooms where the limit value is exceeded.
- Repeat radon measurements for 60-90 days during the heating season to ensure that the implemented measures have helped.

3) The upper limit value of 200 Bq/m³ is exceeded

- All reduction measures mentioned under section 1) and 2) above are performed.
- Significantly increase the ventilation (manual and mechanical) in the lower floor of the building all year round.
- Carry out extensive sealing of the foundation, radon extraction and/or mechanical ventilation of the basement.
- Get in touch with a professional advisor regarding remedying the radon pollution in your home.
- Repeat radon measurements for 60-90 days during the heating season to ensure that the implemented measures have helped.

More on indoor air pollution and solutions:

www.healthyindoorenvironment.org