

14 ways you can help prevent cancer

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Recommendation 10 for Policy-makers on Indoor radon gas

- **Enforce basic safety standards for the protection of individuals' health against radon exposure. Adapt the existing European Union (EU) Directive on ionizing radiation to include alpha radiation emitters such as radon as a source of ionizing radiation in building materials.**
- **Develop general awareness programmes for radon, make user-friendly tools available that include radon prediction maps at the residential, school, and workplace level and increase population-based radon testing.**
- **Provide financial support for radon remediation in homes and other buildings.**
- **Invest in training of recognized public and private bodies for workplace and residential radiation protection.**

Executive summary

Radon is a radioactive gas that originates from the decay of uranium in rocks, soil, and water. It can accumulate in buildings, especially in poorly ventilated areas. Radon is responsible for about 19,000 lung cancer deaths in Europe every year and poses significant health risks because it is the second leading cause of lung cancer after tobacco smoking. Indoor levels of radon can fluctuate widely, making it essential to monitor and mitigate exposure effectively. In terms of cost-benefits, the financial investment required to reduce indoor radon concentrations is likely far lower than the healthcare costs due to radon-related lung cancer and lost earnings due to premature death.

The EU has recognized the importance of addressing radon exposure through the Basic Safety Standards (BSS) Directive (2013/59/Euratom). This Directive mandates that EU Member States establish national reference levels for indoor radon concentrations, with a maximum recommended level of 300 Bq/m³ (becquerel per cubic metre). Many EU Member States have developed national radon action plans to implement measures aimed at reducing radon exposure in both residential and occupational settings.

Although some progress has been made, challenges remain in identifying radon-prone areas and ensuring compliance with safety regulations. Integrated approaches for policy action and continued efforts are needed to raise public awareness, enhance testing and remediation practices, integrate radon risk assessments into building regulations and urban planning, incentivise community involvement regarding awareness of radon risks, and provide subsidies to increase the uptake of radon testing and remediation. Addressing radon exposure is crucial to protect public health and reduce the incidence of radon-related lung cancer in the EU. This policy brief describes international policies and guidelines that support policy-makers and other stakeholders to implement the European Code Against Cancer, 5th edition (ECAC5) policy recommendation to address the cancer burden caused by radon.

Key policy actions to reduce radon exposure

- **Align EU radon reference levels with World Health Organization (WHO) guidelines.**
 - Set legally binding reference levels for indoor radon concentrations in line with the WHO recommendation of 100 Bq/m³, or as low as is reasonably achievable but not exceeding 300 Bq/m³.
- **Monitor and evaluate radon policies.**
 - Establish mechanisms for the ongoing assessment of the effectiveness of radon-related policies, allowing for adjustments and improvements based on data-driven insights.
- **Foster partnerships.**
 - Encourage collaboration between environmental and health agencies to integrate radon exposure assessments into broader public health strategies, including cancer prevention initiatives.

- **Provide training.**
 - Ensure that new building codes for radon-resistant construction techniques are supported by training professionals in the proper installation techniques and methods for ongoing testing, to ensure that these measures are effective in maintaining safe indoor air quality.
- **Increase public awareness.**
 - Despite the known risks, many individuals remain unaware of radon exposure in their homes and workplaces, highlighting the need for increased public education and awareness campaigns about radon testing and mitigation.
- **Encourage financial incentives for testing and mitigation.**
 - Provide financial support or tax incentives for homeowners and landlords who undertake radon testing and mitigation measures, making these more accessible for all citizens.

Risk of cancer

- **Major health risk:** The classification of radon as carcinogenic to humans is based on its causal link with lung cancer. Radon is a leading cause of lung cancer, responsible for about 19 000 deaths per year in Europe.
- **Synergistic effects:** The cancer risk associated with radon exposure is significantly heightened for people who smoke; radon exposure is estimated to cause between 3% and 14% of all lung cancers, depending on national radon levels and smoking prevalence.

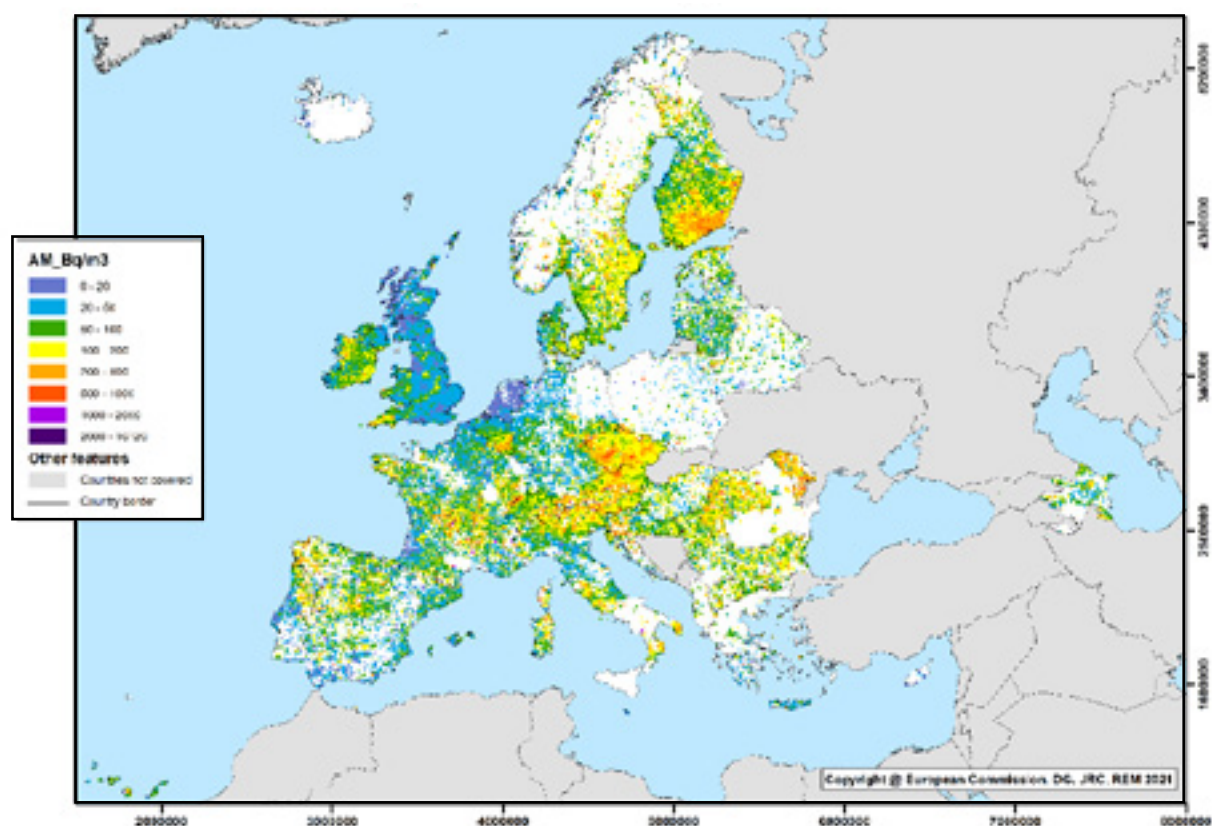


Figure 1: European Indoor Radon Map, November 2021

Arithmetic means over 10 km x 10 km cells of long-term radon concentration in ground-floor rooms (the cell mean is neither an estimate of the population exposure, nor of the risk). Source: European Commission, Joint Research Centre (JRC), Directorate G - Nuclear Safety & Security, REM project

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