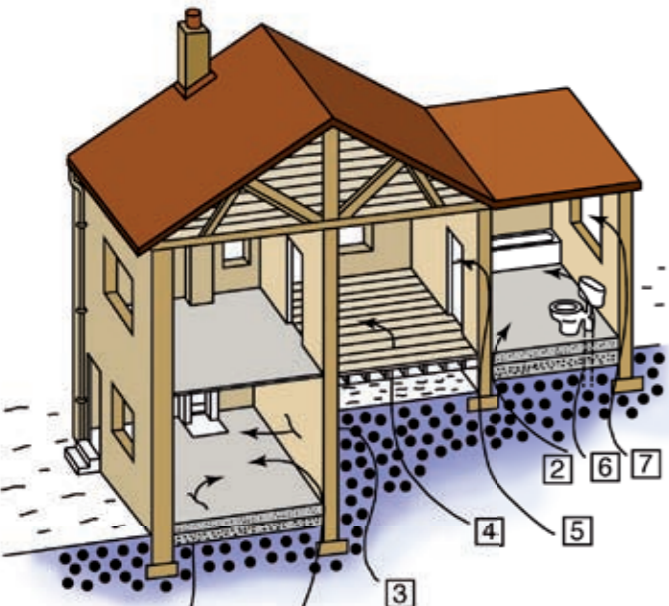


Approximately one-third of the country, mainly in the west and the south-east, is designated as a High Radon Area. Maps showing the High Radon Areas in each county can be viewed on the RPII website - [www.rpii.ie/radon](http://www.rpii.ie/radon).

While homes with high radon concentrations are more likely to be found in High Radon Areas, high radon concentrations can be found in any part of the country.

### Typical Entry Routes into a Dwelling



1. Cracks in Solid Floors
2. Construction Joints
3. Cracks in Walls below Ground Level
4. Gaps in Suspended Floors
5. Cracks in Walls
6. Gaps around Service Pipes
7. Cavities in Walls

### Should radon be measured in new homes in which radon preventive measures were installed at the time of construction?

**Yes.** The installation of radon preventive measures is not a guarantee that radon concentrations will be below the Reference level of 200 Bq/m<sup>3</sup>. The RPII recommends that radon concentrations are measured once the home is occupied.

Specific guidance on radon prevention measures for new homes is contained in "**Building Regulation 1997, Technical Guidance Document C – site preparation and resistance to moisture**" which is published by the Department of the Environment, Heritage & Local Government and is available on its website - [www.environ.ie](http://www.environ.ie). This guidance specifies that all homes built since July 1st 1998 must be fitted with a standby radon sump which can be activated at a later stage, to reduce any high radon concentrations subsequently found. For homes built in High Radon Areas, the installation of a radon barrier as well as a standby radon sump is required.

### Are high radon concentrations found in buildings other than homes?

**Yes.** High radon concentrations can be found in all types of buildings, including workplaces. All indoor workplaces in High Radon Areas **must** have radon measurements carried out and a Reference Level for radon concentrations in workplaces is set out in legislation. Further information on radon in the workplace can be found on the RPII's website [www.rpii.ie/radon](http://www.rpii.ie/radon).

The RPII advises all householders, particularly those living in High Radon Areas, to measure radon. Measurement is the only way of knowing if high radon concentrations are present in your home.

December 2008



Radiological Protection Institute of Ireland  
An Institiúid Éireannach um Chosaint Raideolaíoch

### Mission Statement

In the three year period from 2008 to 2010 the RPII will grow the level of awareness and implementation of the measures needed to protect people in Ireland from the harmful effects of ionising (and non-ionising) radiation through scientifically based regulation, monitoring and advice.

## Radon in Homes

What is it?

What harm can it do?

What can be done about it?

For further information on radon measurements in homes contact the RPII

Website: [www.rpii.ie/radon](http://www.rpii.ie/radon)

Freefone: 1800 300 600



Radiological Protection Institute of Ireland  
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## What is radon?

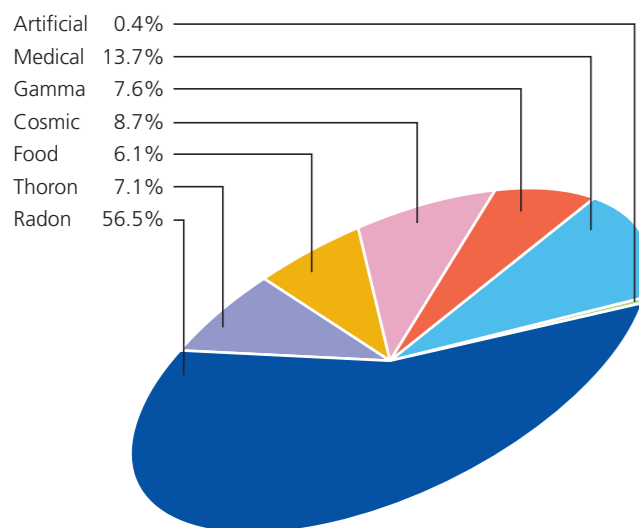
Radon is a naturally occurring radioactive gas formed in the ground by the radioactive decay of uranium which is present in small quantities in all rocks and soils. You cannot smell it, see it or taste it and it can only be measured with special equipment.

## Why is radon harmful?

Radon can cause lung cancer and is in the same group of carcinogens as asbestos and tobacco smoke. In the air, radon decays quickly to produce radioactive particles that, when inhaled, are deposited in the airways and on lung tissue to give a radiation dose that can cause lung cancer. Radon is not linked to other types of respiratory illnesses or other types of cancer.

## What are the risks from radon?

Between 150 and 200 lung cancer deaths in Ireland every year can be linked to radon. Of these, over 90% will be observed in active and ex-smokers. The risk from radon is 25 times greater for active smokers than for lifelong non-smokers exposed to the same concentrations of radon. This is in addition to the lung cancer risk due to smoking itself. Ex-smokers remain at increased risk from radon for a number of years after they have stopped smoking.



Average radiation doses to the Irish population

## How does radon compare with other radiation sources in Ireland?

Radon contributes over 55% of the radiation dose received by the average person in Ireland. Most of the remainder comes from other forms of natural radioactivity such as cosmic radiation from the sun and outer space.

Artificial sources, of which medical exposures are the largest, contribute about 14% of the total dose. Emissions from civil nuclear installations abroad give rise to less than 1% of our radiation dose.

## How does radon get into homes?

Because it is a gas, radon can move through the soil allowing it to enter buildings - mainly through cracks in floors or gaps around pipes or cables - where it can sometimes build up to harmful concentrations. Radon which surfaces outdoors quickly dilutes to harmless concentrations. Minor amounts may also come from building materials and from domestic water supplies.

## How do I check the radon concentrations in my home?

Householders can have a radon measurement carried out by the Radiological Protection Institute of Ireland (RPII) or another radon measurement service. Measurement usually involves posting two small detectors, similar to those shown in the photograph, to your home. One is placed in a bedroom and the other in a living room. Indoor radon concentrations can vary considerably from day to day due to changes in weather conditions, ventilation rates, etc. and for this reason the measurement period should not be less than three months. The detectors are returned for analysis at the end of the measurement period and following analysis, the results and recommendations are sent to you by post.



Radon detectors

## At what radon concentration should action be considered?

Radon concentration is measured in becquerels per cubic metre of air ( $Bq/m^3$ ). The becquerel is a unit of radioactivity and corresponds to one radioactive disintegration per second.

The **Reference Level** for long-term exposure to radon in homes, above which the need for remedial action should be considered, is **200  $Bq/m^3$** . The Reference Level should not be regarded as a rigid boundary between safety and danger but rather as a guideline as to when one should consider taking action to reduce the radon concentration.

The RPII recommends that long-term exposure to radon concentrations above the Reference Level should be avoided.

## What can be done to reduce high radon concentrations in a home?

Radon problems in a home can be fixed easily, relatively inexpensively and usually without disruption to the household. A booklet entitled **Understanding Radon Remediation – A Householder's Guide** which will help you learn more about the solutions available and how best to deal with the problem, has been published by the RPII and is available from its website - [www.rpii.ie/radon](http://www.rpii.ie/radon). In addition, the RPII holds a list of companies who are known to provide a radon remediation service and this is also available on the website.

Technical guidance on radon remediation techniques is available from the Department of the Environment, Heritage & Local Government and in a booklet entitled **Radon in Existing Buildings – Corrective Options**. This booklet is available from the Government Publications Sales Office, Molesworth Street, Dublin 2 (Tel: 01 6793515) or from the "Building Standards" section of the Department's website [www.environ.ie](http://www.environ.ie).

After any remediation work a repeat radon measurement should be carried out to check that the radon levels have been reduced.

## Are some areas in Ireland more at risk from radon than others?

**Yes.** Areas where 10% or more of homes are predicted to have radon concentrations above the Reference Level are designated as High Radon Areas and are shown in brown on the map - Radon in Irish Dwellings - below.

## Prediction Map of Radon in Irish Dwellings

