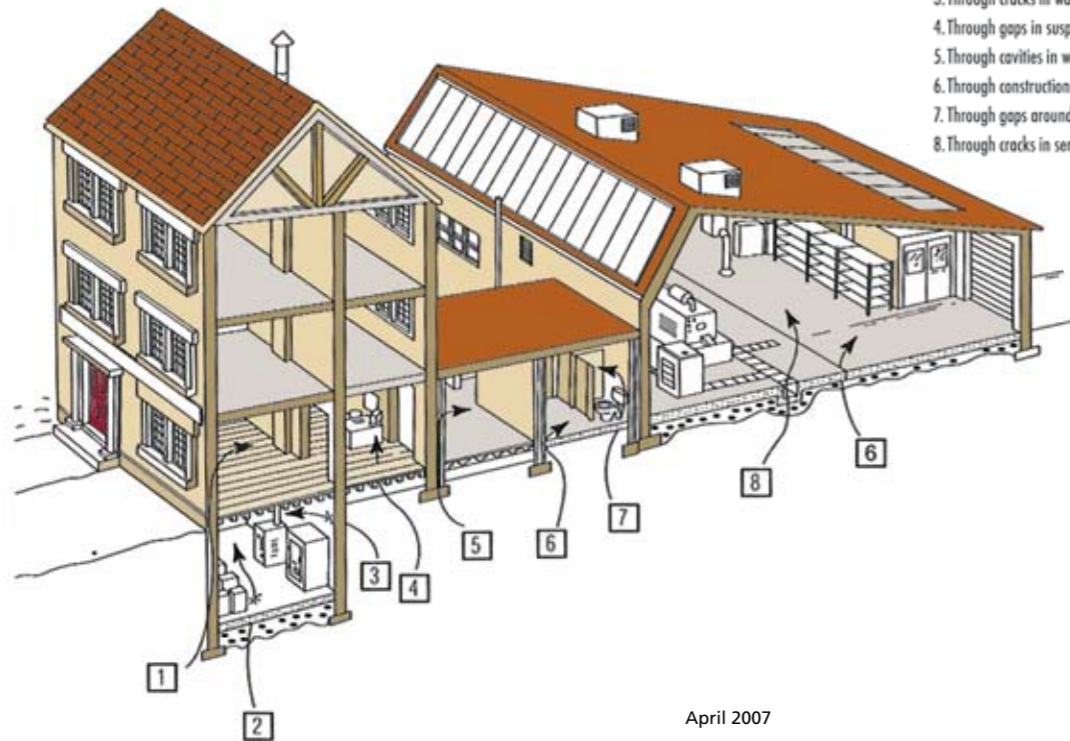


What must an employer do if the radon concentration in a workplace exceeds the Reference Level?

The preferred and simplest course of action is to carry out remedial work to reduce radon concentrations to below the Reference Level.

Alternatively, an employer may carry out an evaluation to determine if remedial measures to reduce the radon concentration are justified. Guidance notes on how to carry out this evaluation are available on www.rpii.ie.

Typical Entry Routes into a Building



1. Through cracks in walls
2. Through cracks in solid floors
3. Through cracks in walls below ground
4. Through gaps in suspended timber floors
5. Through cavities in walls
6. Through construction joints
7. Through gaps around service pipes
8. Through cracks in service ducts

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Radiological Protection Institute of Ireland
An Institiúid Éireannach um Chosaint Raideolaíoch

Mission Statement

“To protect people from the harmful effects of ionising radiation, both natural and man-made, through effective regulation, monitoring of the environment and the provision of accurate and timely advice to the public and to Government.”

Radon in Workplaces

What is it?

What harm can it do?

What are an employer's responsibilities?

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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.

In Ireland, the Radiological Protection Institute of Ireland (RPII) is the national organisation which provides advice on and regulates radon in workplaces.

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, it 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.

How does radon get into workplaces?

Because it is a gas, radon can move freely through the soil enabling it to enter buildings - mainly through small 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 water supplies.

What are an employer's responsibilities under legislation governing radon in the workplace?

The Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000 (S.I. No. 125 of 2000), (which is regulated by the RPII), sets a radon concentration of 400 Becquerels per cubic metre (Bq/m³), measured over any consecutive three-month period, as the Reference Level for radon in Irish workplaces. When this Reference Level is exceeded, the employer must take measures to protect the health of workers. Under the legislation, employers can be directed to have radon measurements carried out in their workplace.

The Safety, Health and Welfare at Work Act 2005 requires employers to identify all hazards in their workplace, including radon, to assess the risk to health and safety from these hazards and to put in place measures to eliminate or reduce the risk. According to the Health & Safety Authority, all indoor workplaces in High Radon Areas* located at ground floor or basement level must be measured for radon.

**A High Radon Area is an area where the RPII predicts that more than 10% of dwellings will have radon concentrations above 200 Bq/m³. Maps showing these High Radon Areas have been produced for each county and are available on the RPII website (www.rpii.ie)*

Is radon an issue only in High Radon Areas?

No. Workplaces with high radon concentrations can be found anywhere in the country. Mines, show caves and other underground workplaces are particularly at risk and should be measured for radon. For other workplaces not located in a High Radon Area, employers are urged to take a proactive approach and consider having radon measurements carried out.

How is radon in the workplace measured?

Radon measurements must be carried out by an approved measurement service. The RPII does not approve radon measurement services but it does hold a list of such services which is available on its website (www.rpii.ie). Radon concentrations should be measured in all workspaces located on the ground floor or basement levels in which workers spend greater than 100 hours per year.



Radon detectors

Areas that are occupied infrequently such as corridors, washrooms, toilets, storerooms, stairwells, etc. need not be measured for radon.

How many detectors are required for a workplace survey?

The recommended number of detectors per workplace is based on the total floor area to be surveyed and on the workplace type.

- For individual office type workplaces, one detector per office
- For open plan office type workplaces, one detector for every 200 m³

- For large workplaces such as warehouses or workshops, one detector for every 400 m³

The RPII has produced more detailed guidance entitled "Planning Radon Surveys in Workplaces - Guidance Notes" which are available on its website (www.rpii.ie) and should be consulted when planning radon surveys in large or complex workplaces.

Prediction Map of Radon in Irish Dwellings

