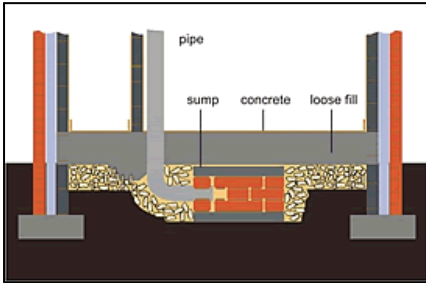


## Practical control of radon levels in buildings



Control measures normally involve installation of radon sumps and extraction pipe work. An example is shown in the picture attached (provided by Health Protection Agency). Other measures may include positive

pressure ventilation, sealing gaps in floors and walls in contact with the ground and improved indoor ventilation. Further information can be obtained from [www.buildingcontrol-ni.com](http://www.buildingcontrol-ni.com) and [www.bre.co.uk/radon](http://www.bre.co.uk/radon).

## Reviewing radon risk assessment

As with all health and safety risk assessments, their applicability should be kept under review. The following guidelines are suggested:

Radon level Bq/m <sup>3</sup>	Frequency of re-measurement
Significantly less than 400	Once every 10 years
Just below 400	More frequently than every 10 years
Above 400	During remediation, immediately after remediation and significantly more frequently than every 10 years

Contact Details:

**hseni**  
CONTROLLING RISK TOGETHER

**Southern Group**  
Environmental Health Committee  
*a vision for the future*



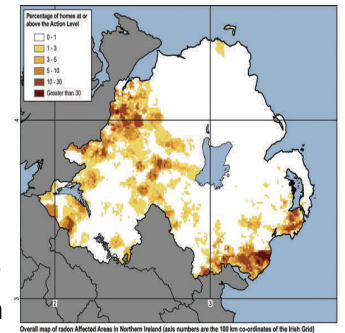
# RADON

## What is Radon?

Radon is a naturally occurring radioactive gas emanating from many naturally occurring rocks and soils and can build up in indoor workplaces. Radon has no taste, smell or colour. Radon and the radioactive elements formed during its decay can be inhaled and enter the lungs. Inside the lungs, these elements continue to decay and emit radiation. This radiation causes cell damage which can lead to lung cancer. Radon is measured in units of becquerels per cubic metre, Bq/m<sup>3</sup> (i.e. concentration of radioactivity in air). Radon contributes by far the largest component of background radiation dose received by the UK population and significant exposures are possible in workplaces.

## Radon Affected Areas

Radon Affected Areas have been defined as parts of the country with 1% probability or more of present or future homes being above 200 Bq/m<sup>3</sup>. The indicative atlas was published in 2009 by the Northern Ireland Environment Agency ([www.doeni.gov.uk/nea](http://www.doeni.gov.uk/nea)). Many parts of Northern Ireland have high radon levels. The darker the colour on the radon map the greater the probability of a high radon level in a building. To confirm the Radon Affected Area status of a workplace an employer may choose to request a radon risk report for their postcode area from [www.ukradon.org](http://www.ukradon.org) (a small fee is charged).



## Workplaces which may be affected

The highest levels are usually found in underground spaces such as basements, caves and mines. High concentrations are also found in ground floor buildings. High radon levels have also been linked with workplaces incorporating water and air conditioning in which the pressure is unbalanced.

## Legal requirements for workplaces – risk assessment

Under the Health and Safety at Work (NI) Order 1978, employers must, so far as is reasonably practicable, ensure the health and safety of employees and others who have access to their work environment. The Management of Health and Safety at Work (NI) Regulations 2000 require the assessment of health and safety risks. This includes radon. See also [www.hse.gov.uk/radiation/ionising/radon.htm](http://www.hse.gov.uk/radiation/ionising/radon.htm)

## Testing for radon

Radon measurement surveys are simple and inexpensive (approximately £25 per measurement). They are carried out by leaving small plastic passive detectors in rooms of interest. The Health Protection Agency (HPA) website ([www.hpa.org.uk](http://www.hpa.org.uk)) contains up-to-date details of [validated laboratories](#) which supply detectors for radon measurements.

Measurements are usually made over a period of three months and the worst-case winter levels estimated using seasonal correction factors. Between two and ten monitors are often enough for most buildings.

Assessment of radon risks should include radon measurements in the following circumstances:

- All workplaces located in Radon Affected Areas
- All occupied (> 1 hour per week average) below ground workplaces irrespective of Radon Affected Area
- During remedial action
- Review periodically

## What will the test results mean?

The Ionising Radiations Regulations (NI) 2000 (IRR2000) apply where radon is present above the defined level of 400 Bq/m<sup>3</sup> and employers are required to take action to restrict radon exposure. The UK advocating a Target Level of 100 Bq/m<sup>3</sup> in addition to the current level of 400 Bq/m<sup>3</sup>. Reducing the radon levels to below 100 Bq/m<sup>3</sup> is the ideal outcome for remediation works in existing buildings and protective measures in new buildings. The Target Level is being promoted in schools and other premises where occupancy by members of the public exceeds 2,000 hours per year and may be reflected in future legislation. In Radon Affected Areas employees could also be receiving significant exposure at home. Employers are strongly encouraged to recommend home testing to their employees who live in the Radon Affected Area.

Level	Radon concentration (Bq/m <sup>3</sup> )
Regulatory surveillance	400
Average in homes	20
Average outdoors	4