Bath & North East Somerset Council

Improving People's Lives

Radon Toolkit

Contents

Introduction and purpose of this toolkit

This toolkit provides trusted information to help the public, landlords, tenants and employers understand radon, its health risks, and how to reduce exposure. It supports informed decisions about testing and mitigation, especially in high-risk geographical areas. Employers and professionals can use it to access guidance, meet legal responsibilities, and take appropriate action if high radon levels are detected.

Section six of this toolkit provides posters, newsletter and website content, and sample social media messages to help promote radon awareness among householders, employers, landlords, tenants, and school leaders.

What is Radon?

Radon is a naturally occurring radioactive gas that can affect properties of all types, ages, locations and uses. The gas is formed when uranium in the soil and rocks beneath us decays. When it permeates the ground into open air, it is quickly diluted to low concentrations, however if it rises into a building, it can become trapped and build to dangerous concentrations.

Health risks from exposure to Radon

- Radon increases your risk of lung cancer
- The higher the radon, the longer the exposure, the greater the risk
- Radon causes over 1,100 deaths from lung cancer each year in the UK
- The risk from radon is higher if the person is an ex-smoker and significantly greater for current smokers.

Radon produces a radioactive dust in the air we breathe. The dust is trapped in our airways and emits radiation that damages the inside of our lungs. This damage, like the damage caused by smoking, increases our risk of lung cancer.

How can I reduce my risk?

- Find out if you live in a radon risk area
- If you do, measure your home

- If the radon is high, reduce it
- If you smoke, give up

To find out more here about the evidence of health risks from exposure to radon.

Where is Radon found?

Every building contains radon, but the levels are usually low. The chance of a higher level depends on the type of ground that properties are built on. The UK Health Security Agency (UKHSA) has published a map showing where high levels are more likely. A simple check of the indicative radon map will provide the estimated risk in your local area.

The darker the colour on the map the greater the chance of a higher level of radon. The chance is less than one home in a hundred in the white areas and greater than one in three in the darkest areas.

If the risk of high radon levels being present is greater than 1 in 100, the area is designated as a 'radon affected area'.

You can request a more detailed radon risk report from UKHSA which carries out an address search and will tell you the estimated probability that an address is above the action level for radon.

The map should not be used for basements, cellars or underground sites, all of which should be considered as having an increased chance of high radon levels, regardless of location.

Information for homeowners

Radon can affect buildings of any age, type or size. If you live in an area that is designated as a 'radon affected area' and your address indicates that your home is above the action level for radon, the UKHSA recommends that testing is carried out to measure the radon concentration. If you own your home, it is your own choice whether you want to test for radon or not and if high levels are found, whether you want to take any remedial action.

Home testing is a simple process, for which kits are widely available from validated laboratories online or from the UKHSA. If high levels are detected, proven methods exist to reduce indoor radon concentrations and lower exposure.

Various digital monitors are now available; however, the most common method of radon testing involves placing special passive detectors in the property for a period of time before returning them to a laboratory for analysis. Air enters the detectors, and any radon particles will make small etches on a special plastic lens within the detector. The shape, size and number of these etches is then analysed under a special microscope in the laboratory.

Ordering a home radon measurement pack

Homeowners can order a UKHSA radon home measurement pack here, or contact the UKHSA Radon Group, telephone 01235 822622, or visit the website www.ukradon.org (which contains more information on radon in homes and workplaces).

How to measure for radon

Radon testing should be carried out within the main living areas and at least one bedroom. This is to ensure that the radon concentration within the areas that are most occupied are ascertained. In an average-sized home, two detectors will usually be sufficient (one for a living room and one for a bedroom). If the property is very large, has a basement or has had extensions built at different points in time, more detectors may be required to gain a full picture.

Under normal circumstances, radon testing should be carried out over a three-month period. This is because radon levels fluctuate constantly and to gain an accurate result, the average over several months is required. Radon levels vary from season to season, with the highest levels usually present during the winter months. Radon testing can be carried out at any point during the year, and the testing laboratory will apply a seasonal ‘correction’ factor to take account of this.

More information can be found here

If the radon levels are found to be high, there are measures that can be carried out to reduce these levels (see the next section).

Reducing Radon Levels: Key Measures

Remedial measures to reduce radon levels would include one or more of the following. More information about these measures, the costs associated with them and what to do if levels of radon are found to be over 1000 Bq/m³, can be found here.

Basic Sealing & Ventilation

Simple actions like sealing loft hatches or floor gaps and adding ventilation alone are not effective. However, they can support other radon reduction methods. Fully sealing floors is difficult and may cause wood rot.

Radon Sump

The most effective method. An active sump with a fan works best under solid or membrane-covered floors. Passive sumps (no fan) may help in some cases.

Positive Ventilation

A quiet fan introduces fresh air, usually from the roof space, into the building.

Natural Under-Floor Ventilation

Improves airflow beneath suspended floors, helping to lower radon levels.

Active Under-Floor Ventilation

Uses a fan to blow in or extract air from under suspended floors when natural ventilation isn't enough.

Cellars & Basements

Specific guidance is available for reducing radon in these areas.

Information for employers

Hazard Identification & Radon Risk Assessment

UKHSA advises radon should be identified as a hazard if you have a workplace with one or more of the following circumstances:

- it is a building in a radon Affected Area
- it has a basement area that is occupied for more than about 50 hours each year
- it is a mine, cave, or other underground environment
- it has a suspected radon source such as ground water (e.g. treatment works) or geological samples.

If radon is identified as a hazard, employers are legally required to carry out a suitable and sufficient risk assessment under Regulation 3 of the Management of Health and Safety at Work Regulations 1999 and any control measures identified should be implemented.

Ordering a workplace measurement pack

A workplace measurement pack can be ordered from UKHSA here or contact the UKHSA Radon Group, telephone 01235 822622, or visit the website www.ukradon.org (which contains more information on radon in homes and workplaces).

Actions for employers if radon levels are high

If the test results show that the radon level in any part of the workplace building exceeds a maximum level of 300 Bq/m^3 (Bequerels per cubic metre of air) the Ionising Radiations Regulations 2017 (IRR17) apply. Under IRR17, an employer is required to take advice from a Radiation Protection Advisor (RPA) as to who may use which parts of the building and for how long, monitor usage times, potentially display warning signs and so forth. Where very high levels are found, a building may have to be closed.

The employer can appoint a specialist contractor to carry out remedial works, such as installing a radon sump or utilising air management techniques to lower the radon concentration in the building. See section above ‘Reducing Radon Levels: Key Measures’. Radon testing must then be repeated to confirm that the levels have fallen below 300 Bq/m3, and IRR17 will no longer apply.

Further information on radon in the workplace can be found on the following websites:

- Health & Safety Executive website
- UKradon - Employers
- Information for Employers · UK Radon Association

Additional information for school leaders

Radon in schools' awareness campaign

The UKHSA's 'radon in schools' awareness campaign here aims to 'improve health protection by giving duty holders in schools the knowledge and awareness to ensure that no individual is exposed to high levels of radon gas'. Radon is being highlighted in schools to protect staff and students.

Information for landlords and tenants

If you rent your home, it is your landlord's responsibility to ensure that there are no hazards present. Whilst boilers and fuse boards are regularly maintained, radon is often overlooked. The Housing Health & Safety Rating System (HHSRS) is used by Local Authorities to evaluate potential risks and hazards to health and safety in a residential property. HHSRS covers 29 different categories and includes radon. More information can be found here

The guidance states that "If the dwelling is in an 'affected area', then the construction and condition of the ground floor and the presence of open chimney flues and the means of ventilation should be assessed. If present, the state of any remediation measures should be checked. However, the condition of these will only indicate that there could be a problem. And, as radon levels can vary widely between apparently identical dwellings, the only way to determine whether there is a threat to health is by measurement."

To fully comply with the risk assessment requirements of HHSRS, landlords with properties located in 'affected areas' should carry out a radon test. Order a radon domestic pack here

If radon levels are found to be more than the domestic Action Level of 200 Bq/m3, the landlord should arrange for remedial works to be carried out. See section above 'Reducing Radon Levels: Key Measures'.

Under HHSRS hazards are classified into different bands and categories according to the seriousness of the risk posed to occupants and likelihood of injury or illness occurring as a result. Band A hazards are the most serious or dangerous hazards and Band J are the most minor. Hazards falling in Bands A-C are classified as Category 1 hazards and those in Bands D-J are Category 2 hazards. If a Local Authority inspector discovers a Category 1 hazard in a home, they have a duty to ensure that this hazard is rectified without delay. An informal approach is often the first course of action, however if a landlord fails to comply the Local Authority can issue an Improvement Notice or prohibit the use of part or all the property until the hazard is reduced.

Communication templates and resources

Posters

Radon resource for the public - plain

https://drive.google.com/drive/folders/18oJ5Gef4wEkCFBxOyr7ZEQbweuCDiURj

Social media posts

About radon-Public

About radon-Landlord

About radon-Employer

https://drive.google.com/drive/folders/18oJ5Gef4wEkCFBxOyr7ZEQbweuCDiURj

Newsletter and website content

If your organisation produces a newsletter or a webpage the following template can be used to provide information to the public about radon:

Radon

Radon is a naturally occurring radioactive gas that can affect properties of all types, ages, locations and uses. The gas is formed when uranium in the soil and rocks beneath us decays. When it permeates the ground into open air, it is quickly diluted to low concentrations, however if it rises into a building, it can become trapped and build to dangerous concentrations

High levels or radon can cause lung cancer, particularly for smokers and ex-smokers. Radon produces tiny radioactive particles in the air we breathe. Radiation from these particles damages our lung tissue and over a long period may cause lung cancer. The higher the level and the longer the period of exposure, the greater the risk will be. Find out more here.

If you own your home, it is your own choice whether you want to test for radon and if high levels are found, whether you want to take any remedial action. Firstly, a radon risk report can be carried out which tells you if your home is in a radon affected

area. If it is, then the UKHSA recommend that the radon concentration is measured. This can be ordered here

If you rent your home, it is your landlord's responsibility to ensure that there are no hazards present, which includes radon. To fully comply with the risk assessment requirements of The Housing Health & Safety Rating System (HHSRS) landlords with properties located in 'affected areas' should carry out a radon test. This can be ordered here

If the radon levels are found to be high, there are mitigations that can be carried out to reduce these levels. More information about these measures can be found here

More information about radon can be found on the UKHSA website here

Acknowledgements and contact details

Thank you to the UK Radon Association who produced and gave permission to use their resources and website information.

For any further information please contact:

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References

- https://www.bathnes.gov.uk/radon-gas
- https://www.ukradon.org/
- UK Radon Association · Helping to improve understanding of radon and reduce the risk of exposure in UK homes & workplaces
- https://ww3.rics.org/uk/en/journals/property-journal/assessing-threats-to-health-from-radon-.html
- Radon - average per post code p 96 Bath.pdf
- Health & Safety Executive website
- https://www.ukradon.org/cms/assets/gfx/content/resource_4430csce052ea95d.pdf