



What is Radon Gas?

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Radon is a naturally occurring radioactive gas emitted from the ground. It is a decay product of uranium, of which minute deposits are found in the rocks and soil beneath the Earth's surface.

As a gas, radon travels through pathways in the soil and rocks and is drawn to areas of low pressure by a process called advection (the movement of gas from a point of high pressure to a point of lower pressure). The air pressure inside buildings is usually slightly lower than the pressure in the soil or the air outside, so the gas is actively drawn inside buildings.

Radon can be found anywhere in the country, however it is known to be more prevalent in certain geographic locations. Public Health England has advised that all properties with basements are at increased risk of radon gas intrusion, regardless of location. This is due to the basement having multiple surface areas in contact with the ground through which the gas can permeate. In addition, a basement usually represents a large area of low pressure to which radon from the surrounding earth will be attracted.

Is Radon Dangerous?

Long term exposure to elevated levels of radon gas has been linked with lung cancer, and it is estimated that over 2,000 people in the UK die each year from lung cancer attributed to its exposure. It is likely that many of these victims were not aware of the risks of radon and as such had not taken precautions to protect their homes or workplaces from its intrusion.

Using the right materials and techniques, a building can be protected from radon intrusion by safely diverting the gas away from the property so that elevated concentrations are not able to accumulate within the accommodation. In the open air, radon escaping from the ground is quickly diluted to low concentrations and poses no threat to health.

How Do I Know If My Basement Is Affected By Radon?

Radon levels inside a building can be tested using a special passive detector. The detector is a small plastic disk which contains a lens. As air enters the detector, any radon present will make tiny indentations on this lens which can be analysed under a microscope in a laboratory to assess the level of gas present.

When an existing cellar is being converted into a useable basement, it is not appropriate to carry out tests prior to the conversion as these will not be representative of the radon levels after conversion. Altering the heating, ventilation and wall linings will all affect how much gas is drawn into and trapped within a basement, so even if low levels of radon are present in a draughty, unused cellar, once converted the levels may increase significantly.

How Can I Protect My Home From Radon?

The British Standard for below-ground waterproofing, BS8102:2009 requires radon to be taken into account in the design and installation of any waterproofing system. Techniques used for basement waterproofing can be adapted so that they also provide radon protection. This will usually involve the addition of one or more fans to manage airflow and pressure differences. It is important that a specialist is consulted as levels can be increased by installing the wrong equipment or failing to pay attention to detail, for example when sealing joints of a membrane.

Whenever a basement is converted or created, it is vital that a radon test is carried out on completion to ensure that radon concentrations are of an acceptable level. Testing should not be carried out until all building and decorating works are finished.

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