radon

A guide for homebuyers and sellers

radon
Don't live with the risk

ENVIRONMENT AND HERITAGE SERVICE

This booklet, published by the Environment and Heritage Service (EHS), provides information about methods for radon reduction. Every effort has been made to ensure that the information is accurate, but the EHS cannot accept liability for the application of this advice. EHS cannot endorse or recommend any particular supplier, product or service.

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Radon - a guide for homebuyers and sellers

You may know that some areas of Northern Ireland are affected by radon, and if you are thinking of buying a house in one of them, this might seem alarming. Perhaps you live in one such area already, and plan to sell your house. Either way, this leaflet is for you: to help you understand radon risk, how radon is measured and how it can be cheaply and effectively countered.

The first thing everyone should know is that **even in areas the Government has identified as affected by radon, most homes do not have a radon problem**. However, some do - **but in affected houses the problem of radon can usually be tackled with simple, inexpensive and effective measures**. These measures are comparable in cost to work such as damp-proofing and timber treatment, which people often carry out when buying a house. In fact, the best way to think about radon risk is as just one factor among others when you buy property; if you come across a property that suits you well but has a radon problem the radon problem can be treated to make it a house you are happy to occupy.

Radon - back to the facts

Radon is a radioactive gas that occurs naturally. It has no taste, smell or colour; in fact, special devices are needed to detect it. Radon is everywhere, usually at levels that pose negligible risk.

Where does radon come from?

When uranium decays, it becomes radium, and when radium decays, it becomes radon. Uranium is found in small quantities in all soil and rocks, but amounts vary from place to place. Variations are on a very small scale: there may be different levels of radon even between neighbouring buildings.

Radon rises from soil into the air; outdoors, radon is diluted and the risk is poses is negligible. When it stays in enclosed spaces, however, concentrations can build up.

Radon can be dangerous

It should be emphasised that when radon concentration is high, it does pose a serious risk to your health. Radioactive decay of radon forms particles called 'radon daughters', and if you breathe these in they damage your lung tissues. Many health studies around the world have linked radon and lung cancer. Scientists measure radon levels in Becquerels per cubic metre (Bq/m^3), and the National Radiological Protection Board (NRPB), the Government's independent advisors, have advised the Government that the level of $200Bq/m^3$ should be considered the **Action Level**. Radon is the second largest cause of lung cancer - the first is smoking, but people who are exposed to high levels of radon are more likely to get lung cancer (much more so if they are smokers). However, even if you would find it difficult to cut down on smoking, you can take easy, cheap and permanent steps to bring down a house's indoor radon levels to an acceptable level of risk.

What should be done by people in affected areas?

The Government recommends that people in affected areas test their houses for radon, and has offered a free postal test that involves monitoring radon in the home with a simple, safe device for a period of three months. The free test is offered only to homes in areas identified as 'highest risk'. Homeowners are contacted directly by the NRPB. In other areas people may wish to take a test for peace of mind. A test may be carried out free of charge, but if you live in a

lower risk area the cost of a test will be about £35. If you have not taken it and you are worried about radon contact the Environment and Heritage Service and ask for a leaflet about the test, *Radon: you can test for it*. The address is at the end of this booklet.

The Government, the NRPB and the Building Research Establishment (BRE) all recommend that if householders' indoor radon levels test above the Action Level, they should take radon reduction measures as soon as practical - and then take the test again to give themselves peace of mind.

The radon test pack

Can I tell about radon problems by the age, type or location of a house in an affected area?

Unfortunately the usual answer to this question is no. Radon levels vary from house to house and for the most part, the type of house has not been shown to determine indoor radon levels. For example how old a house is, its size, whether it is a bungalow or not, cannot be used to predict whether radon levels might be lower or higher. The only true way to tell is by the radon test.

Building Regulations and Radon

Since 1994, the Building Regulations have required measures to be taken to prevent or limit the ingress of radon into any new dwelling in certain areas. The regulations also apply to any extension to a dwelling where the ground floor area of the extension is greater than 30m^2.

The Building Regulations for radon do not apply retrospectively to any existing dwellings nor to dwellings which had received approval before 28 November 1994 when the radon regulations came into effect.

If you want to know whether or not a dwelling incorporates radon protection measures the Building Control Department of your district council will be able to help. They will also be able to show you a map defining the areas where the Building Regulations for radon apply.

A straightforward approach

For a property sale in a radon affected area, the best way for both buyer and seller to approach the radon problem is openly and straightforwardly. If a house hasn't been tested for radon, it might seem that deciding on a proper price will prove complicated, but other people have faced the problem before, and some simple solutions have been worked out; they are described below.

Ask if the house has been tested

Sellers are not obliged to volunteer information they know, but you can ask if the house has been tested and, if it has, ask to see the letter giving the result.

If, as will be found in most cases, the result is under 200Bq/m^3, the house has no radon problem.

If the result is over 200Bq/m^3, then there is a problem. But it is not necessarily the case that 'the higher the level, the greater the problem'. A house might have quite high levels of radon but only need simple measures to reduce them. A lot depends on the house's construction. It is also important to emphasise that levels vary greatly - some houses have been found with well over 1,000Bq/m^3, so a level of for example 220Bq/m^3, although needing action, is not exceptional.

The seller may already have taken measures to reduce indoor radon levels. If so, he or she should have taken the radon test again - in which case you should ask to see the result of the second test.

What if the house has not been tested?

Many houses will not have been tested. If this is true for the house you want, you could choose two courses of action.

- **You could have the house tested with a short test**.
  Because radon levels vary from summer to winter, week to week, and even day to day, it is important that the test should take place over as long a period as possible. The NRPB's standard 3-month test and the 4-6 weeks needed to process it do not suit most housebuyers' timetables. However, there are short term tests you can do that give a result in about two weeks. Test results from these should be treated very cautiously, because seasonal variations and occupants' lifestyles could affect short tests. But the short test will give you some indication of whether the problem is likely to emerge. The NRPB and the Radon Council Ltd can give you more information about short tests.

- **You could take the longer test after you move in**.
  When you have moved into the house, you can take the full three-month test, and it will reflect the way you live in the house. Clearly, it is more accurate that the short test.

How can I arrange a price with the seller?

No seller should be asked to accept a lower price for a house just because it is in a radon affected area - or if his or her radon level has tested below the Action Level. As you have read above, very few houses are actually affected by radon problems and so price adjustments are only appropriate on a house-by-house basis.

However, if the radon level has tested above the Action Level, buyer and seller should agree on a fair price reduction to reflect the cost of radon reduction work. 'Fair' means that it should reflect reasonable costs, not the most expensive possible solution. See page 8 to find more information about cost levels.

The more difficult case is when radon levels are not known at the time of sale. The BRE favours the radon bond as a solution to this problem and it has proved popular with buyers, sellers and financial institutions alike. Buyer and seller agree on a likely sum of money, enough to cover typical radon reduction costs. The money is taken out of the buyer's paying price and held by a third party (for example, a solicitor) until the test result is known and any reduction measures have been done. Both parties sign a contract that lays down how the bond will work.

If the test shown there is no problem, the bond money goes to the seller. If the test shows there is a problem, reduction work is paid for from the bond money; any excess is returned to the seller.

For the bond to work, it must be fair to both parties. It must reflect reasonable costs, not the most expensive possible solution. The bond's life must be realistic; allowing - for example - nine months from completion of house sale to a radon test result, with another six months for radon reduction work if needed.

What should I do it I plan to sell my house?

If your house is within a radon affected area, consider taking the radon test, because it will speed up negotiations. When advising buyers about houses within radon affected areas, it is surveyors' standard practice to inform them about radon issues - so your buyer is likely to ask to see test results or ask to have the house tested. Don't forget that most houses don't have a problem, so you

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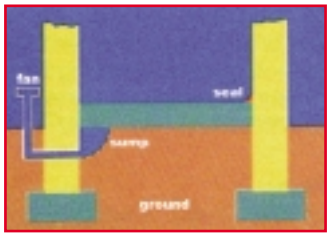

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1. A radon sump system works by drawing air from the soil beneath your house and redirecting it harmlessly into the atmosphere.
2. Sump systems are generally the most effective method of reducing high levels of radon. The system pictured was installed in one day.
3. Positive ventilation fans blow air from a loft - or fresh air from outside - into your home.
4. Modern plastic louvred airbricks are a cheap and simple way to help dilute radon beneath suspended concrete or timber floors.

are likely to find peace of mind by getting the test done in your own time. If your house does test with a high indoor radon level, then you could consider proposing the radon bond described above.

What are the likely costs and complications of radon reduction work?

It is best to stop radon entering a house or, if this is not practical, to try to remove it if it gets in. The aim in both cases should be to reduce indoor radon levels to well below the Action Level. There are five main ways to achieve this; they are described briefly below and dealt with in greater detail in the free booklet *Radon - A guide to reducing levels in your home*, available from the Environment and Heritage Service (see page 11 for details).

Choice A Install a radon sump system
The average cost of a system is about £750. It can be installed in a day or two. The sump is a small void (about the size of a bucket) dug under a solid ground floor or sub floor concrete in the case of a suspended timber floor, to which a pipe and usually a fan are attached. The system limits the amount of radon that enters the house, and for a typical house is by far the most effective method. Sumps are often excavated from the side of the house, so there is no disruption inside.

Choice B Improve ventilation under suspended timber floors
Costs could be in the region of £200-£500, but again vary considerably. New air bricks are installed in walls just above ground level; in some cases a fan system is also installed. The system again limits the amount of radon that enters the house.

Choice C Use positive ventilation in your house
The average cost of the system, which is designed to change the air pressure in your house by blowing air from loft level, is around £450. The system both dilutes the radon to acceptable levels, and stops some of it getting in. It can be installed in a day.

Choice D Seal cracks and gaps in solid concrete floors
Costs for this work vary a lot: you could spend as little as £25, but it does depend on the house and could cost five or ten times as much. The seals prevent radon entering the house through the floor.

However, it is essential that all cracks are sealed. This will involve removing for example carpets and skirting boards. Sealing only, say 90 per cent of cracks is likely to have little effect on radon levels.

Choice E Change the way your house is ventilated
This solution is only suitable in quite special cases, and has drawbacks, but can prove quite inexpensive.

Some choices are more suitable for some houses than others. The costs on many of them can be reduced by do-it-yourself-work - see the Environment and Heritage Service Booklet for more details. BRE publish useful guides about some of the choices, which are also listed on page 11.

Further information

Having read this booklet, you may well have further questions.

- you can get an information pack on radon in the home, with advice about radon, its health risks and details of how to order the test from the **NRPB Radon Freephone** on **0800 614529**; or by post from **NRPB, Chilton, Didcot, Oxon OX11 ORQ**; and

- you can approach your local district council (the Environmental Health Officer or the Building Control Officer) for advice.

The following professional organisations unite and regulate members practising their respective trades:

Builders	Construction Employers Federation Ltd 143 Malone Road Belfast BT9 6SU Tel: 028 9087 7143
	National House Building Council 59 Malone Road Belfast BT9 Tel: 028 9068 3131
	Federation of Master Builders 42-44A New Row Coleraine Co Londonderry BT52 1AF Tel: 028 7034 0999
Architects	Royal Society of Ulster Architects 2 Mount Charles Belfast BT7 1NZ Tel: 028 9032 3760
Quantity Surveyors	Royal Institute of Chartered Surveyors 9-11 Corporation Street Belfast BT1 3BA Tel: 028 9032 2877
Trading Standards Branch	Northern Ireland Enterprise Trade and Investment Department 176 Newtownards Road Belfast BT8 4QS Tel: 028 9025 3900

Useful publications

Radon - you can test for it
Radon - a guide to reducing levels in your home
Radon - a guide for homebuyers and sellers

are published by **Environment and Heritage Service**. Free copies can be obtained by ringing 028 9025 4709 or writing to:

Environment and Heritage Service
Calvert House
23 Castle Place
Belfast
BT1 1FY

BRE sells easy to follow guides, and a video:

Video: *Radon - No Problem*
For builders and householders, it offers easy to follow guidance on how to go about reducing radon levels in existing homes
1994 £13.50 inc VAT and p&p

More information about the guides, and the video are available from:

Construction Research Communication Ltd
151 Rosebery Avenue
London EC1R 4QX

Tel: 020 7505 6622
Fax: 020 7505 6606

NRPB also provides the following video
Radon - The Home Video **£3.00 inc p&p**

NRPB
Chilton
Didcot
Oxon OX11 0RQ

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