Public Health England

Environmental Radon Newsletter

March 2014 Issue 72

Welcome to the 72nd issue of the *Environmental Radon Newsletter,* which was established in 1994 aiming to inform those working in the radon industry about news, developments and projects within the sector.

We hope you continue to find the newsletter interesting and informative. As always, we are happy to hear your thoughts and views on it. If you have any comments please contact the editor, **daryl.dixon@phe.gov.uk**.

What do you want to hear?

The date has been set for the next radon forum, but not the theme, so we would welcome your suggestions.

Each year the radon team at Public Health England's Centre for Radiation, Chemical and Environmental Hazards, in Oxfordshire, hosts a day of discussion and talks on radon-related opics.

The next forum will be on Friday 7 November 2014:

> "In recent years we've considered risk communication and solutions. Last November we ran a great event around radon in the workplace," said Neil McColl, head of radon at PHE CRCE.
>
> "We have ideas of our own for the next event and there are plenty of topics we want to explore but it would be interesting to hear what topics we should be looking at and inviting presentations on."

If you would like to make any suggestions please contact **sue.hodgson@phe.gov.uk**.

Radon's role in shale gas methane explored

The part radon plays in threats to public health from fracking are explored in a report from PHE.

The report on the health effects of fracking was published for comment in October 2013 and explores various aspects of the controversial gas extraction technique.

PHE radon specialists were asked to contribute to the report, on the risks that fracking might play in increasing public radon exposure. The comments received are now being evaluated.

Across the pond …

The US Environmental Protection Agency staged its annual national radon action month in January.

Every year the EPA urges people across the US to test for radon and does what it can to raise the profile of the gas. It has been running the action month for several years and, in 2012, 31 states took part in events including exhibitions, workshops and presentations.

The EPA website has a range of promotional materials and suggestions for campaigns. For more information visit **www.epa.gov/radon/nram/**.

Testing time

PHE has published a report comparing the performance of radon detectors in 2012. The study saw 35 laboratories from 13 countries submit 42 sets of detectors to PHE to test in its radon chamber.

The detectors were then posted to participating laboratories which tested the detectors and reported their results back to PHE.

The findings are available at **www.hpa.org.uk/Publications/Environment/PHECRCEReportSeries/PHECRCE001/**.

The 2013 intercomparison is now closed, but companies wishing to take part in the 2014 programme should contact **zori.daraktchieva@phe.gov.uk**.

The *Environmental Radon Newsletter* is going digital only – if you would like to receive email notification of publication and a link to the newsletter online, please subscribe at **www.ukradon.org.uk/information/newsletter**.

Radon and house sales

Buying a house is one of the largest financial investments for most people, so it is important to do everything to help the process go smoothly. For many people, the condition and affordability of the property are important factors, but there can be other concerns – for example, whether a property is affected by radon gas.

Concern about radon arises because it is radioactive and can cause lung cancer. It comes from trace amounts of naturally occurring radioactive elements that occur in all types of rocks and soils, so all buildings have some level of radon. PHE has mapped areas of the UK where the risk from radon is greatest and where occupiers may wish to consider taking steps to reduce the risk to their health.

During the conveyancing process, a number of standard questions are asked about the property on the Con 29 local authority search form and the TA6 property information form. Some of the questions relate to radon, for example:

Is the property in a radon 'Affected Area'?
Has the property been tested?
Has remedial work been carried out?

If the property is in an Affected Area, the vendor should be asked whether they have measured the radon level and, if so, to provide a copy of the result. Simple measures are used to reduce radon levels, typically costing between £200 and £800.

The property may be in a radon Affected Area, but no test result is available. As the test takes three months, it may be difficult for it to be completed before the new owners move in. In this instance, it is possible for the buyer to arrange to hold a retention (an agreed sum of money) through their solicitor to be used for remedial costs if radon levels are high. When the buyer has moved in and completed a test, the retention can be used to fund remedial work if required. A typical retention sum would be between £500 and £2000. It is usually held for six months initially, allowing the buyer time to move in and complete a radon test. If levels are high, the retention is held for a further six to nine months while remedial work is completed. Any money unused for remedial purposes will be returned to the seller. If radon levels are found to be low, the retention is returned to the seller.

High radon levels can be reduced and should not be a reason not to buy a property. It is useful if a test result is available prior to purchase; however, if this is not possible, a retention can be held so there is no extra cost to the buyer.

Useful points of contact

PHE Radon Group contact details are given on page 4

UKRadon provides general information on radon and details of PHE radon services, including radon risk reports for individual properties in the UK

For a risk report where there is no valid postcode, the building footprint is larger than 25 m in any direction or for plots of land, visit http://shop.bgs.ac.uk/GeoReports/

BRE (Building Research Establishment)
E: radon@bre.co.uk
www.bre.co.uk/radon

Health and Safety Executive
www.hse.gov.uk/radiation/ionising/radon.htm

Northern Ireland Environment Agency
E: ipri@doeni.gov.uk
www.doeni.gov.uk/niea/pollution-home/radiation/radon.htm

Welsh Government, Directorate of Sustainable Futures
wales.gov.uk/topics/housingandcommunity/housing/publications/radon

Scottish Government, Health Protection Team
Public Health Division, Area 3EN
St Andrew's House, Regent Road, Edinburgh EH1 3DG
T: 0131 244 2164

The Radon Council Ltd
E: admin@radoncouncil.org
www.radoncouncil.org

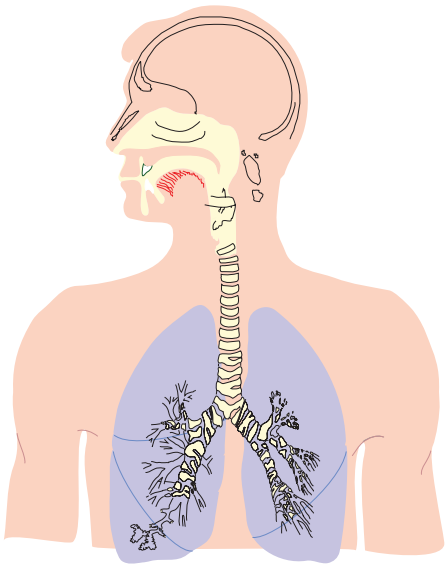
A list of laboratories validated by PHE for radon measurements in homes remains available at www.hpa.org.uk

Radon and the risk from lung cancer

Most people are probably aware of the lung cancer risk from smoking, but far fewer people in the UK know of the potential health risk from the effects of radon. Even in areas of the country with high radon levels, many householders only become aware of potential concern about radon when they come to buy or sell a property or apply for planning permission to make changes to a building.

Local councils have duties in relation to local environmental hazards but have a wide remit and, unless their area is particularly affected by radon, it may not be high on their list of priorities for action. The result can be that local knowledge about radon is fairly limited so it may not feature strongly in the local population or property-related businesses. Reassuringly, however, at the point of purchase, documentation from a buyer's solicitor will formally note the potential presence of radon for a particular address. With this fairly low profile generally, however, PHE receives many enquiries from members of the general public and small business owners who have had environmental search results that identify radon as a local concern and who wish to know their risk level.

A European study, funded by Cancer Research UK and the European Commission[1], showed that radon



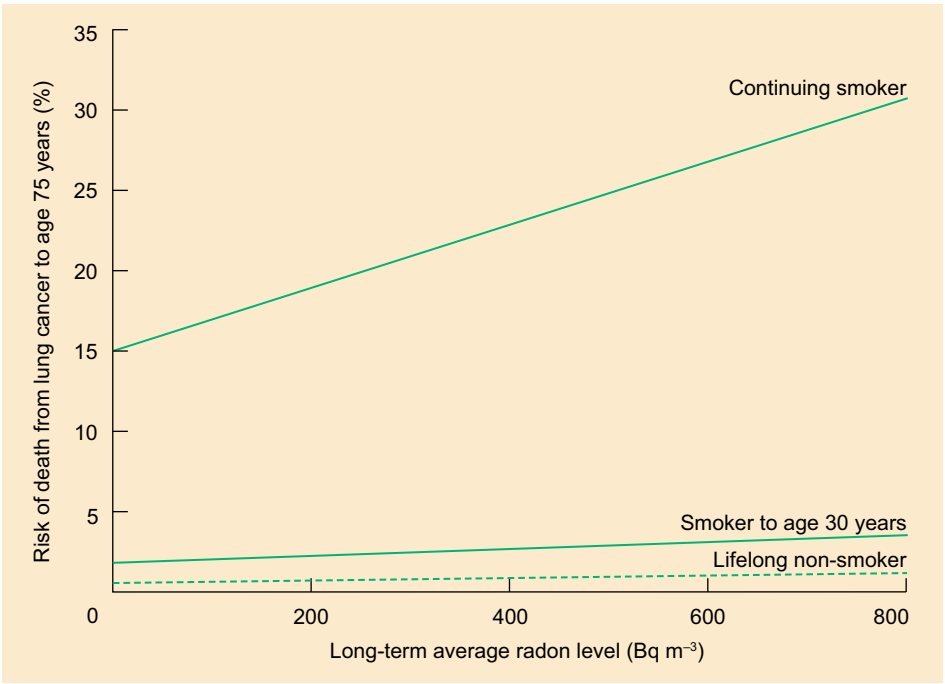
in the home increases the risk of lung cancer, and a report by an independent advisory group, *Radon and Public Health,* estimated that radon is a cause in over 1100 lung cancer deaths each year in the UK[2]. The lifetime risk of lung cancer due to radon is greatest for smokers.

The table and chart show how an individual's risk of dying from lung cancer is determined by their long-term smoking history and exposure to radon. For those who stop smoking, the risks are substantially lower than for those who continue, but remain elevated for many years.

With the proven links between smoking, radon and lung cancer there is a clear, ongoing need for campaigns aimed at reducing smoking also to include information about the potential added risks from living and working in radon Affected Areas.

Risk of death from lung cancer to age 75 years in the UK, by smoking history and long-term radon level at home

Indoor radon level (Bq m^{-3})	Non-smoker	Current smoker	Ex-smoker (stopped at age 30 years)
20	Less than 1 in 200	1 in 7	1 in 60
200	1 in 190	1 in 5	1 in 48
800	1 in 100	1 in 3	1 in 28



Risk of death from lung cancer to age 75 years in the UK against long-term radon level at home, by smoking history

References

1 Darby S, Hill D, Auvinen A, et al. Radon in homes and risk of lung cancer: collaborative analysis of individual data from 13 European case-control studies. *BMJ,* **330,** 223–37 (2005).

2 AGIR. *Radon and Public Health.* Report of an independent Advisory Group on Ionising Radiation. *Doc HPA,* RCE-11, 254 pp. Chilton, HPA (2009).

Public Health England
Wellington House
133–155 Waterloo Road
London SE1 8UG, UK
www.gov.uk/phe
Twitter: @PHE_uk

PHE publications gateway number: 2013512

PHE Radon Group
Centre for Radiation, Chemical and Environmental Hazards
Public Health England
Chilton, Didcot, Oxfordshire OX11 0RQ, UK
T: +44 (0)1235 822622
E: radon@phe.gov.uk

Reducing risk to tenants in social housing

Social housing is provided to many families in radon Affected Areas. Landlords have a duty of care to their tenants to provide a safe home. Radon causes lung cancer and is identified as a health hazard in the Housing Act 2004. Prolonged exposure to radon concentrations above 200 Bq m^{-3} could seriously affect people's health. The risk is greater if tenants are also smokers or ex-smokers. Some people are not aware of the danger radon presents because it is an odourless, colourless gas that cannot be detected with our usual senses.

PHE organises periodic campaigns and road shows to raise awareness of the health hazards from radon. We also work with social landlords to make radon measurements in their properties. In some cases tenants may need encouragement to allow their rented property to be tested for radon. This can be facilitated by a social landlord representative visiting the tenants and explaining the process and benefits to them. The representative can even offer to place and retrieve the detectors if required.

When the measured radon level exceeds the action level of 200 Bq m^{-3} PHE recommends that levels should be reduced, preferably to below the target level of 100 Bq m^{-3}. The source of radon is in the ground under the floor, so it cannot be removed. Therefore the only practical way to reduce the radon level is by one of the methods explained in the box below.

The landlord should select the most appropriate form of remediation for the property, taking into account the property type and construction, the living style and habits of the tenants, the radon levels and the budget.

Some of the most popular remediation methods

Natural under-floor ventilation

Good ventilation of the under-floor space can reduce the radon concentration. This works by diluting the radon underneath the house using outdoor air. The under-floor vents have to remain open and clear of dirt to provide good air flow. This method is suitable for homes with a suspended ground floor with a space underneath. This is the cheapest option and it is suitable for radon concentrations slightly above the action level.

Positive ventilation

Positive ventilation is a method which pumps fresh air from outside into a home. It requires a ventilation unit to be fitted in the loft with an air filter and a fan. The flow of air to the house creates a positive pressure which reduces the radon ingress from the ground. The best results require the windows in the property to be closed. It is effective in homes with radon levels up to 500 Bq m^{-3}.

Sump system

This is the most effective remediation method for reducing radon levels. An active radon sump is a small hole excavated under the floor, from which a quick route out is provided for the gas, the radon is extracted through a pipe and released into the outside air by an electric fan. Sumps work most effectively under solid floors, but can be used for suspended floors when the ground is covered with concrete or a membrane.

Editor:

Daryl Dixon
daryl.dixon@phe.gov.uk

This newsletter is produced for the Chartered Institute of Environmental Health and the Royal Environmental Health Institute of Scotland by the Centre for Radiation, Chemical and Environmental Hazards of Public Health England. It is published quarterly as an insert in the CIEH journal *Environmental Health News* and the REHIS journal *Environmental Health Scotland*. In addition, it is distributed to subscribers by PHE and is freely available at www.ukradon.org. The views expressed in the contributions are not necessarily those of the CIEH, REHIS or PHE.