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Remediation Case Study Series 4. Disguising radon remediation

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Radon mitigation consultants should never forget that people's houses are their homes and there is no reason why, with careful planning and execution, effective systems cannot be installed that are both quiet and visually discrete. This article considers radon mitigation systems and various ways in which they can be camouflaged or hidden.

People with high radon levels generally have two main questions regarding proposed remediation systems:

- Will it work?
- What will it look like?

Exhaust pipes from sump systems can sometimes be seen snaking their way up the front or side of buildings, drawing attention in a less-than-positive way. This is sometimes referred to as 'The Chip Shop Effect' (visually obtrusive, utilitarian external ducting). If remediation specialists are to promote the take-up of radon mitigation systems, they must work more closely with homeowners. Together, for a building, they should agree a solution which achieves an effective reduction in radon level and ensures a professional finish that is both visually discrete and quiet.

Placement of radon sumps and fan units on the exterior of buildings should be considered carefully during the survey process. Often homeowners have a preferred location in mind, say the side or rear of a property, but due regard must also be given to the impact such placement may have on close neighbours.

Many homeowners would rather not see ductwork at all. In this case, it may be possible to install a low level exhaust outlet to terminate around half to one metre above ground. However, it is important that these outlets are not adjacent to any opening portals such as doors or windows, to avoid the possibility of radon gas venting directly into a property.



Low level fan-assisted sump system

Some homeowners may not wish to see their fan units at all, in which case a variety of fan enclosures may be considered. A popular choice is to use simple concrete cubes measuring about 450 mm square, which contain the fan unit and ancillaries. These sit comfortably at ground level next to or at some distance from the property and are often utilised as pot stands to disguise their real purpose.

If budget constraints are not an issue then there really are no limits to the design of



Concrete cube enclosure with top vent for a fan-assisted sump system

an effective disguise for radon fans and ductwork. Some popular options are:

- Siting the fan unit and vent some distance from the treated property
- Enclosing the fan unit completely underground with only the cap of the air vent above the surface: this type of installation is almost invisible to even the most discerning of onlookers
- Installing false downpipe and guttering to disguise the sump system, so that only the householder will be aware of its presence
- Installing the sump inside the property, allowing all ductwork to run internally, typically through built-in cupboards or through dedicated trunking. In this case the fan unit would be located in the loft and the ductwork vent through the roof or eaves.

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Stephen Hunter is a radon remediation specialist with over 30 years of experience in property construction and consultation. The information in this article represents his judgement and views.

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POINTS OF CONTACT

www.UKradon.org provides general information on radon and details of HPA radon services, including radon risk reports for individual properties in the UK

Radon Survey
Centre for Radiation, Chemical and Environmental Hazards
Health Protection Agency
Chilton, Didcot, Oxon OX11 0RQ
Tel: 01235 822622
email: radon@hpa.org.uk
www.hpa.org.uk/radon

BRE
Garston, Watford WD2 7JR
www.bre.co.uk/radon

Health and Safety Executive
Health Directorate B6
Rose Court, 2 Southwark Bridge
London SE1 9HF
Tel: 020 7717 6854
www.hse.gov.uk/radiation/ionising/radon.htm

Welsh Government
Department for the Environment,
Sustainability and Housing
Cathays Park, Cardiff CF10 3NQ
Tel: 0300 060 3300

Industrial Pollution and Radiochemical
Inspectorate
Northern Ireland Environment Agency
Gasworks Business Park, Belfast BT7 2JA
Tel: 028 9056 9299
email: IPRI@doeni.gov.uk
www.ni-environment.gov.uk/pollution-home/radiation/radon.htm

Scottish Government
Housing and Regeneration
Victoria Quay, Edinburgh EH6 6QQ
Tel: 0131 244 5575

Radon South West Committee
Secretary: Gerald Hudd
Malabar, Hillfarrance, Taunton
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Tel: 01823 461095
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Derbyshire Radon Steering Group
c/o Environmental Health Department
Derbyshire Dales District Council
Town Hall, Matlock, Derbyshire DE4 3NN

The Radon Council Limited
PO Box 39, Shepperton
Middlesex TW17 8AD
Tel: 01932 221212
email: info@radoncouncil.org
www.radoncouncil.org

Laboratories validated by the HPA
for making measurements of radon
concentrations in homes are listed at
www.hpa.org.uk/radonvalidation

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

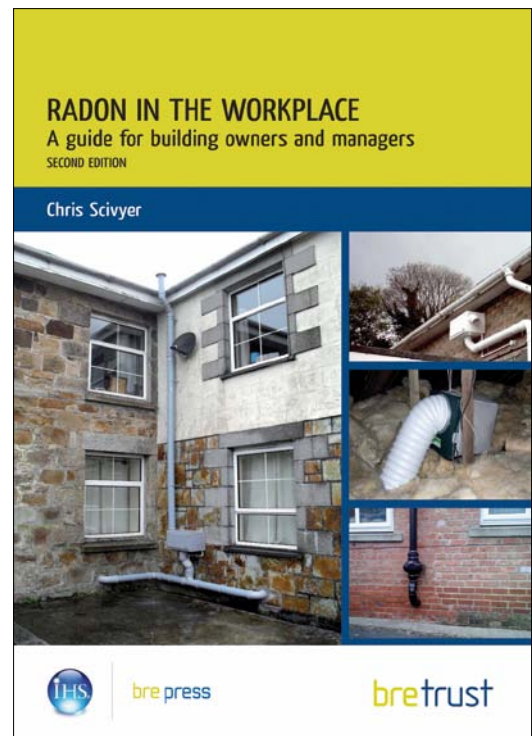
Radon in the workplace: revised BRE guidance:

Chris Scivyer, BRE, scivycr@bre.co.uk

The second edition of the popular BRE guide 'Radon in the Workplace' has just been published. The guide has been prepared by BRE to help employers protect their staff in line with their legal responsibilities regarding radon remediation. It has been thoroughly updated to include lessons learned and changes in legislation since the first edition came out in 1995. The guide therefore includes a brief outline of current workplace legislation as well as useful background information on radon and its health risks.

The guide is specifically aimed at employers and those who control workplace buildings such as building managers and control and maintenance staff, as well as architects, surveyors and building contractors. It aids those who may be asked to determine whether a building has a radon problem or have been asked to reduce known elevated radon levels. It advises and describes step by step the process of reducing elevated radon levels in workplace buildings. The solutions are intended to be straightforward to install, and can often be carried out by an employer's own maintenance team.

In order to be able to select a solution for a building, it is first important to understand the different types of construction of buildings and how air flow within each type can vary. To assist with this, the guide describes how to identify common construction types and how different site, geology, history and building ventilation regimes can have positive or negative effects on radon levels. It then goes on to describe the most commonly effective radon solutions and where these may be used. It concludes with a series of case studies describing a range of different building types together with appropriate solutions.



Publication of the revised guide should prompt employers to assess the risk from radon to their employees. For most employers, determining whether their building is in a radon Affected Area or not is sufficient (where 1% or more of homes are estimated to be above the UK domestic Action Level, 200 Bq m⁻³). This can be done by checking on the HPA radon website, www.UKradon.org.

If the building is not in a radon Affected Area and does not include an underground occupied area, no further action is usually required. If a building is in a radon Affected Area, measurements will usually be needed to assess radon exposure. If the workplace radon Action Level (400 Bq m⁻³) is exceeded, employers must act to reduce the radon exposure to their employees (or other parties for whom the employers are responsible).

Following this guide is normally enough to comply with the requirement to deal with known elevated radon levels. It is available from IHS BRE Press on 01344 328038 or visit www.brebookshop.com, reference 'Radon in the Workplace, FB 41, ISBN 978-1-84806-177-4', priced at £30.

Radon remediation: new online training course from BRE

Mike Jaggs, BRE, jaggs@bre.co.uk

Recent research by the Health Protection Agency (HPA) on the success of different remedial measures concluded that the experience and competence of the remediation installer can be a key factor in the success of a remediation measure (see *ERN* Issue 65). This is why practical, thorough and well-thought-out training material is essential for the industry.

BRE, in partnership with the HPA, has for many years provided practical and comprehensive radon training for builders and other construction professionals, presented in conjunction with radon awareness events and campaigns around the UK. In most cases these training and awareness activities have tended to be held in locations with the highest numbers of radon affected properties (high risk areas).

As a consequence, radon remediation training has not always been easily accessible for builders located in medium and lower risk areas. We are therefore aware there remains a lack of trained competent builders to carry out much needed radon remedial works in many parts of the UK. The lack of trained local builders may result in some householders putting off taking remedial action.

To provide a more convenient service for the industry, BRE is launching a new online radon remediation training course that will allow builders and construction professionals to train at a time that suits them – whether that is at work, at home or in another location of their choice. It is also a convenient way for experienced builders to keep up to date with developments in remedial techniques and equipment.

The online course content covers:

- Health risks from exposure to radon
- Measurement – explanation of the radon Action Level and Target Level
- Radon sump systems

- Natural and mechanical floor void ventilation
- Positive pressure ventilation.

The BRE radon remediation course material is delivered in such a way that important messages are provided in an easy-to-understand format, with emphasis on case studies as well as reference to the theory of how remedial measures work. This ensures an overall appreciation and understanding of the subject. Remedial measures are explained in a step-based format using diagrams, photographs and short videos to aid understanding. The training module provides a broad knowledge of radon remedial measures that is vital to achieve a high level of competence in builders and construction professionals. This encourages confidence to deal with both common dwelling types and also the more complex examples that can often be encountered.

All the guidance on remediation offered in the course has been developed using BRE's unique and extensive research-based

experience and over 25 years of practical knowledge from projects in the UK and around the world. BRE has had a great deal of success in reaching contractors with other similar web-based learning modules – for example, asbestos awareness and other construction health and safety issues. On completion of the web-based course, delegates will sit an online assessment which will allow them to demonstrate their understanding of the subject. Successful course delegates will receive a certificate of training.

The BRE online radon remediation course will be launched in early 2012 and the existing BRE/HPA classroom-based courses will continue to be held to coincide with local radon awareness campaigns. In addition, a course on radon protective measures for new buildings is under development. The cost of the online course will be around £40. Further information can be found at www.bre.co.uk/training, or by phoning 01923 664717 or emailing jaggs@bre.co.uk.

Remediation Case Study Series

4. Disguising radon remediation, *continued*

It is generally considered that if a property is sufficiently airtight and the radon level is up to around 500 Bq m^{-3} , then a positive pressure system in the loft can be used effectively to lower radon levels. Positive pressure systems were first developed to overcome problems with condensation and mould in buildings, both of which occur where there is a lack of heat or ventilation. These systems therefore have the advantage of being invisible from the exterior of the property, in addition to reducing any problems caused by such conditions. On the inside, a simple diffuser resembling a down-lighter is visible. Being quiet and discrete, these systems are the preferred choice of some.

Overall, whatever the householder's requirements, they can usually be met by an imaginative and innovative approach by the remediation specialist.



Fan-assisted sump system outlet concealed in false guttering and downpipe as an extension to the genuine gutter system (The board at ground level is simply covering the installation during construction)

Radon makes the headlines

Matthew Pardo, Health Protection Agency, matthew.pardo@hpa.org.uk

Matthew Pardo, press officer at the Health Protection Agency (HPA), reviews the recent attention radon has received in the UK media.

In late summer, *Sun* columnist and BBC *Top Gear* presenter Jeremy Clarkson informed his millions of loyal readers that he was considering packing his bags and fleeing the UK for Libya. The reason was two-fold. One – the London riots meant that life in the capital would change for many of those who lived there. And two – that his local council had sent him two ‘Geiger counters’ to measure levels of the radioactive gas radon in his home because ‘someone’ had noticed it was leaking out from the ground around Chipping Norton. His conclusion was that he could stay in his London flat and risk ‘being set on fire’ or flee for his Cotswold home and face the risk of ‘lumps growing out of my lungs’.

What was interesting about this piece was the way in which radon was portrayed. The nation’s favourite

motoring journalist described in his column pretty accurately, though not scientifically, the threat posed by radon. He talked about it being natural, that it causes lung cancer, that it’s widespread and that some areas are more at risk than others. What more could the radon community ask for than that?

But perhaps it should come as no surprise. The past two years or so have seen national media report the radon issue several times: following the creation of the HPA Target Level for remediation, a measurement campaign of the area including the Queen’s Balmoral estate and publication of a revised radon map of Scotland, the last of which caught the eye of the BBC’s flagship early evening magazine programme *The One Show*.

As a result of HPA initiatives, the issue has also featured strongly in local media. The recent joint campaign between the HPA and West Oxfordshire District Council

made the front page of the *Oxford Mail* newspaper, was a lead story on local television and the issue was discussed on several local radio programmes. And it isn’t only areas where campaigns are underway that have been interested in radon. The HPA data report for England and Wales, published earlier this year, was publicised in each English region with local press releases by the HPA giving the media the facts and figures they could use to frame a story for their own area. And they used it. Stories appeared in the usual places, Devon and Cornwall, but also in media in Worcestershire and Hertfordshire – not the places that jump out automatically as those most affected by radon.

Has all this activity helped make people more aware of radon? Has it increased take-up rates where the HPA has run campaigns? It’s still early days in evaluating the effect of the past 12 to 18 months of media activity – but there is one interesting effect to note in West Oxfordshire. Here the HPA offered for the first time in the locally affected areas 9000 free radon measurements and flagged this with a press release, briefings for local media, interviews with local and regional TV and radio, and even contacted community websites in the areas. The coverage remained just as it always is for radon – ‘Killer Gas Alert’ was the *Oxford Mail* headline – but the message got out there and to date take-up of the free tests is at around 50 per cent, which is one of the best new area positive response rates the HPA has had.

Perhaps this is the clearest message yet, that we should treat the media as an ally not a foe and that proactive messaging is what the radon community should strive for.



Neil McColl of the HPA being interviewed by Meridian News