# Property

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# Scientists want all homes protected from radon threat

## Allowed levels of the cancer–causing gas are too high, reports **Andrew Don**

SCIENTISTS are calling for all homes to be protected against radon following a new study into the health threats posed by the radioactive gas.

The research identified that radon is responsible for 1,000 lung cancer deaths in Britain each year and those who smoke face a threat 25 times greater than non-smokers.

Thirty-six per cent of radon-induced lung cancers occur in homes with concentrations of less than 25 becquerels per cubic metre (bq/m³), says Sarah Darby, professor of medical statistics at Oxford's Radcliffe Infirmary clinical trial service unit.

The average level for all homes is 20 bq/m³, so potentially any home in the country could present an increased risk.

Darby was one of the researchers who carried out a European Commission and Cancer Research study, published at the end of last year and funded by the UK, into the health problems caused by the colourless, odourless gas.

Radon results naturally from the decay of uranium and is found in small quantities in all soil and rocks. It contains radioactive particles, which disperse naturally outdoors, but concentrations can build up if it gets into homes and buildings through routes such as cracks in bricks, the floor, drains and loose-fitting pipes.

Most radon, when breathed in, is exhaled but some of the particles can become attached to the lungs, exposing them to radiation. This damages lung tissue and can lead to cancer. The 25 bq/m³ figure is worrying because housebuilders are currently only required to radon-proof new homes with more than a 3 per cent chance of radon levels exceeding 200bq/m³, the so-called 'action level'.

Yet any area in the country is regarded as radon-affected if it has more than a 1 per cent chance of an elevated radon level over 200 bq/m³.

**The big question is whether the action level will now be lowered**

Cornwall, Devon, Somerset, Northamptonshire and Derbyshire are recognised as particular hotspots because homes there have anything from more than a 1 per cent chance of an elevated radon level over 200 bq/m³ to more than 30 per cent.

The affected areas are defined by maps (see right) produced by the National Radiological Protection Board (NRPB). These were last updated for England in 2002. There are also maps for Northern Ireland. Levels in Scotland are currently being measured.

Daryl Dixon, group leader of radon studies at the NRPB, says: 'There's a certain logic to say that perhaps one should avoid areas [that have a 1-3 per cent chance of being over the action level] at the building stage.'

The Building Research Establishment (BRE) says the big question is whether the action level will be lowered in light of the new research. Chris Scivyer, BRE senior consultant, says: 'All levels are a potential risk. The approach up until now has been to hit the top levels first.'

The BRE says any new-build home constructed to current building regulations would provide adequate radon protection at lower levels, even if the properties were not 'radon-proofed'.

But Scivyer says it would be sensible for existing homes in affected areas to be tested, although there is no legal obligation for existing householders to protect their properties. 'You could argue every home should have protection but then we have major conurbations of London, Manchester and Birmingham which are very low-risk.'

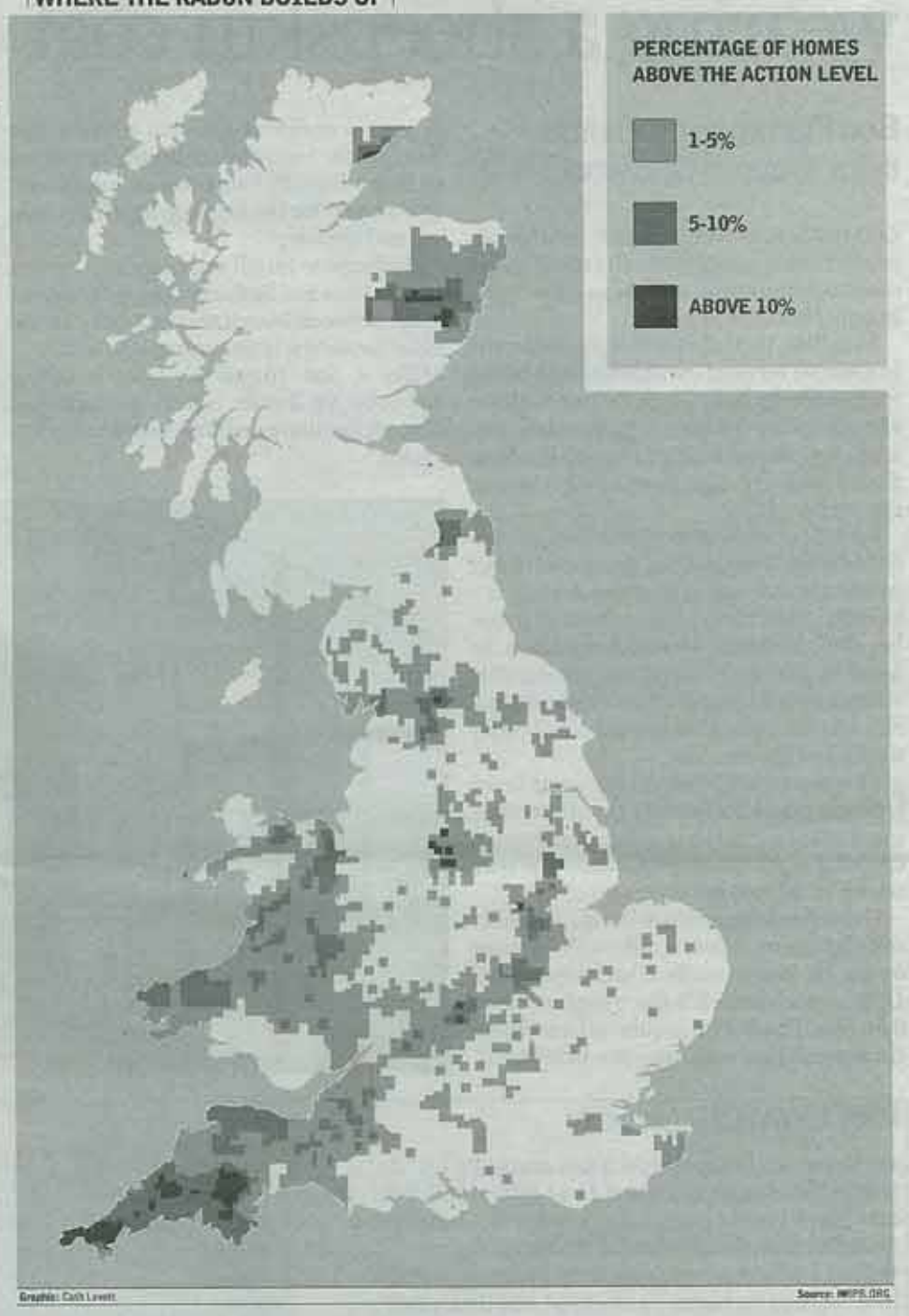
But Darby wants all homes protected because 'there is now good evidence that radon is a risk everywhere', albeit at low levels, she says. 'There has been an assumption up until now that all the risk was concentrated in hotspots whereas, in fact, most of the risk occurs in ordinary homes.'

The NRPB says it has not yet been decided if it will change its recommendations to government on action levels and its expert panels will consider this issue. The Department for the Environment, Food and Rural Affairs (Defra) is considering the new findings, along with the NRPB and the Department of Health.

Defra says about 450,000 government-funded measurements have been carried out so far and every home in England with a greater than 5 per cent probability of being above the radon 'action level' has been offered a free measurement.

A spokeswoman says: 'It could potentially mean the levels of action might have to be revised. Potentially there could be more homes at risk to health.'

WHERE THE RADON BUILDS UP




Graphic: Cath Levett Source: NRPB, ONS

### WHAT YOU CAN DO

THOSE who want to take remedial action in existing homes that have not been radon-proofed during the building process have five main choices:

- Install a radon sump system for £750–£1,000, which is dug under a solid ground floor. A pipe is attached and usually a fan. This will limit the amount of gas entering.
- Improve ventilation under suspended timber floors (£200–£500). This involves installing new air bricks in walls just above ground level.
- Use a ventilation system in your home that is designed to change the internal air pressure by blowing air in from the loft level. This dilutes the radon to acceptable levels and stops some of it getting in. It costs about £450.
- Seal cracks and gaps in solid floors. This will prevent radon entering through the floor, but it is essential that all cracks are sealed. Even sealing 90 per cent of cracks is likely to make little difference. Cost: £25–£250, depending on the house.
- Change the way your house is ventilated. Take expert advice because extractor fans, for example, can aggravate the problem.

In new homes, housebuilders install a radon-proof damp course to seal the foundations. This can cost as little as £100.

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