



Public Health  
England

# Radon: The Basics

Nicky Hutt, Public Health England



Public Health  
England

# Content

Radon basics

UK regulations and PHE advice

Assessing the need to test

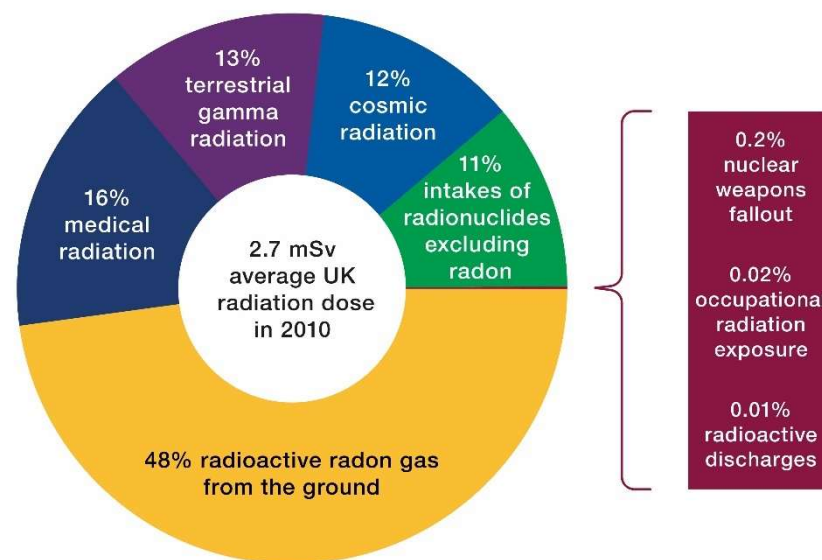
Managing a testing programme

Reducing risk – remedial methods



## Radon basics - Why the concern?

- Radon = radioactive gas
- Second largest cause of lung cancer.
- The biggest source of radiation for most people.



Breakdown of the average UK radiation dose in 2010 by source of exposure

(PHE-CRCE-026 – April 2016)



## Radon basics - perspective

It is important to keep things in perspective.

Health risks from radon are associated with long term exposure to high levels.

Most people live and work in low risk areas.

In high risk areas homes and workplaces can be tested and radon levels reduced if necessary.



## Radon basics - Geology

### A Natural Process:

Uranium in rocks and soils



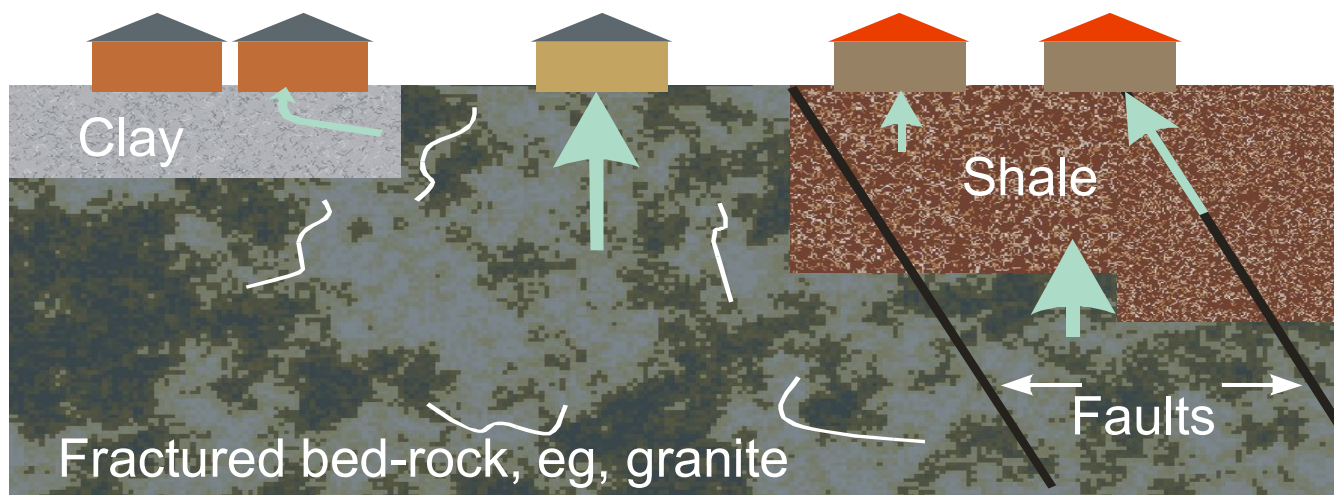
Radium in rocks and soils

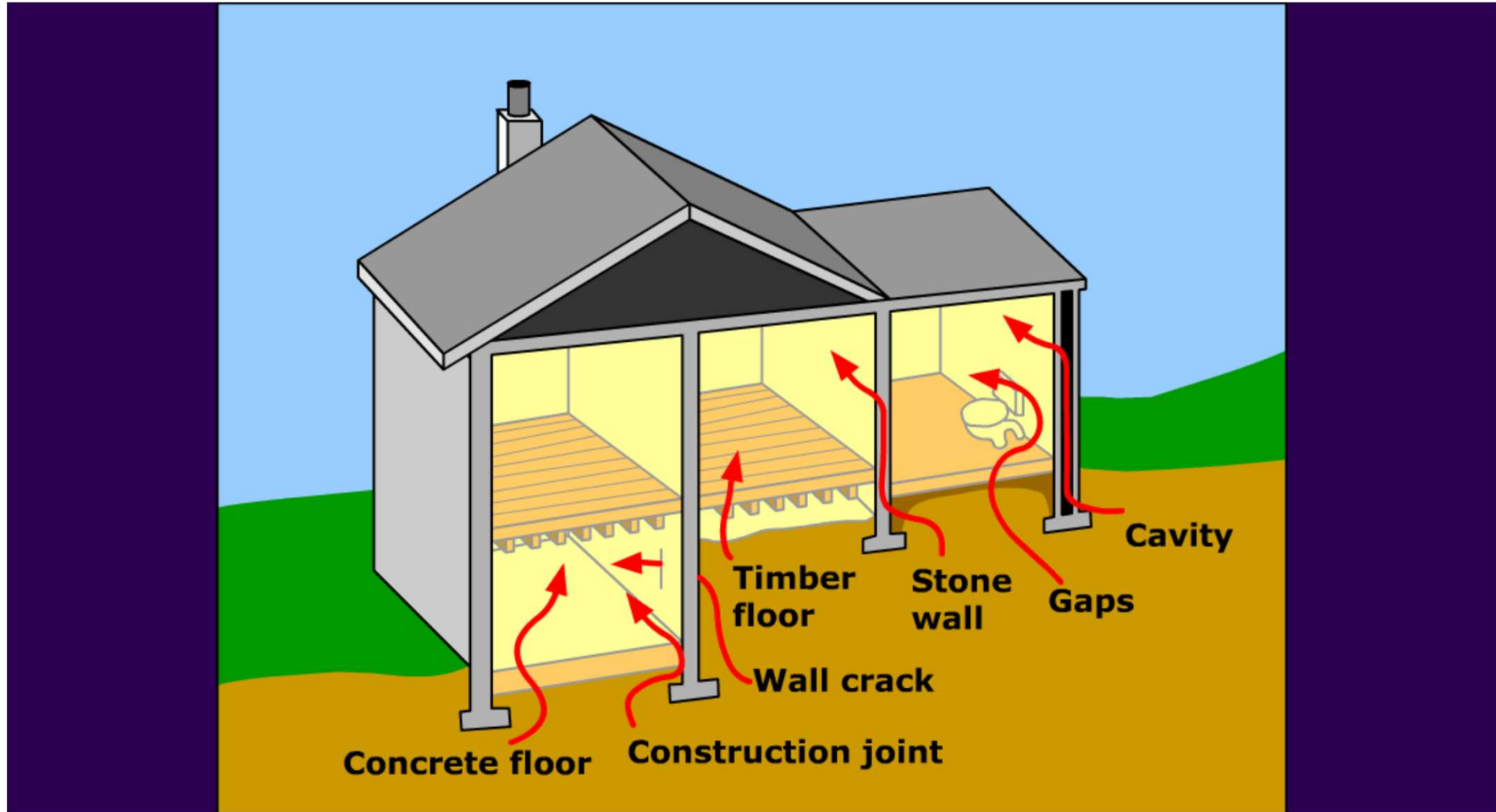


Radon in soil gas

Geological process:

- faulting of rock
- permeability
- movement of gas
- nature of overburden







# Main regulations for limiting Exposure to radon

- Construction of new buildings, extensions and conversions:  
Building regulations
- Health and Safety- Homes: HHSRS
- Health and Safety – at work:  
Management of Health & Safety at Work Regulations 1999  
Ionising Radiations Regulations 2017 (IRR17)

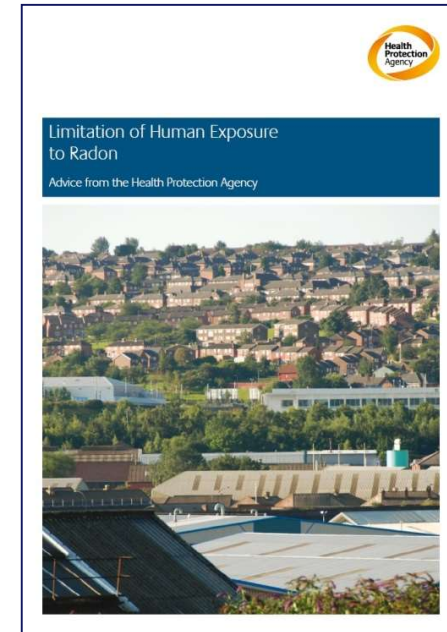


Public Health  
England

## Main PHE advice

Limiting risk to occupiers (domestic)

- Action Level of 200 Bq m<sup>-3</sup> annual average
- Test all homes with a >1% risk of exceeding radon Action Level (Affected Areas)
- Target Level of 100 Bq m<sup>-3</sup> for remediation / higher risk groups
- Domestic Action Level is sometimes considered more appropriate for high occupancy workplaces such as schools and prisons. This is a recommendation and is not enforceable.



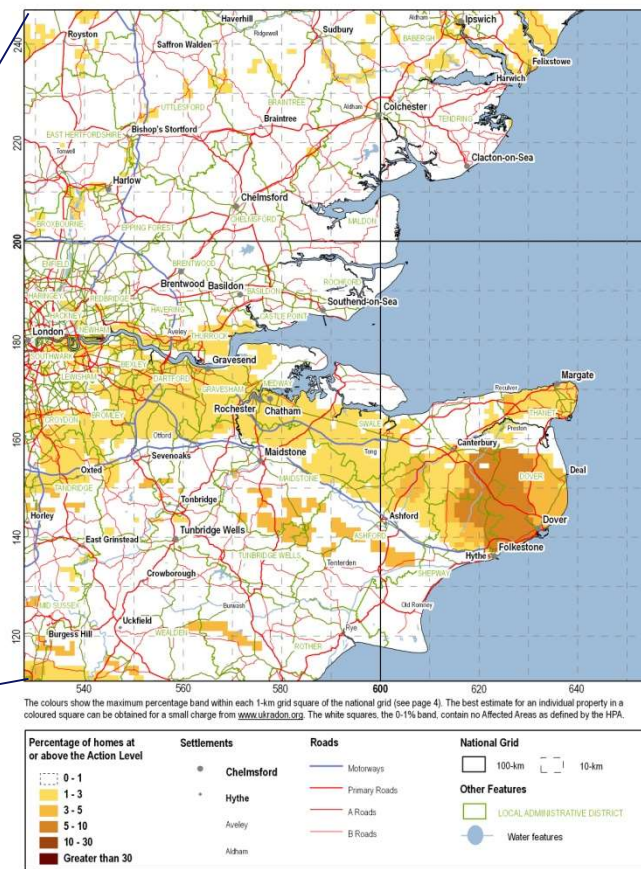
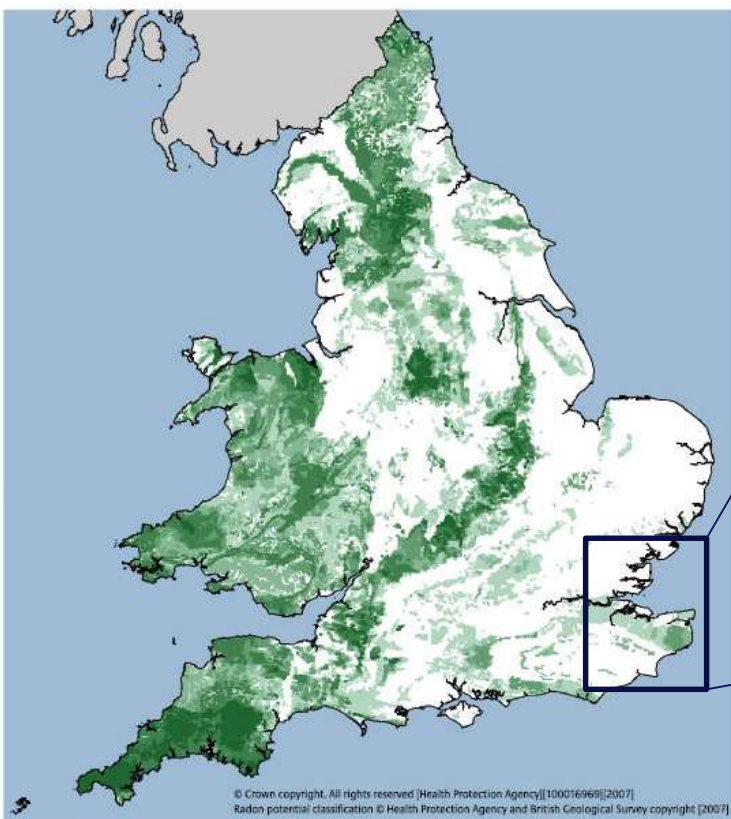
[Limitation of Human Exposure to Radon: RCE-15, Health Protection Agency 2010]





# Indicative Radon Atlas

Overall map of radon Affected Areas in England and Wales (from HPA-RPD-033)





## Assess the need to test

PHE offer three different levels of search which is used to find out if a property is within an Affected Area:

- Indicative search by 1km grid square
- Indicative search by postcode area
- Definitive search by individual property address

Each service becomes more specific as the area searched reduces.

**For properties > 25m – contact BGS for geological search**



Public Health  
England

# Measurements

## Homes:

- A validated test = two passive monitors (main living area and main bedroom)
- Should be occupied normally and for a period of three months.

[www.ukradon.org/information/measuringradon](http://www.ukradon.org/information/measuringradon)

## Workplaces:

- Number of monitors depends on size and use of building
- Should be occupied normally and for a period of three months.

[www.ukradon.org/information/workplace](http://www.ukradon.org/information/workplace)

(for information on out how many monitors are required and where to place them)





Public Health  
England

## Radon detector





## Measurements

- Detectors are sent through the post preferably to the test address
  - Left in position for three months – roughly at head height
  - Returned to PHE for analysis
  - Results are sent 4 – 6 weeks later.
- If it is part of a large project, for example a housing association the results can be reported in a Spreadsheet.



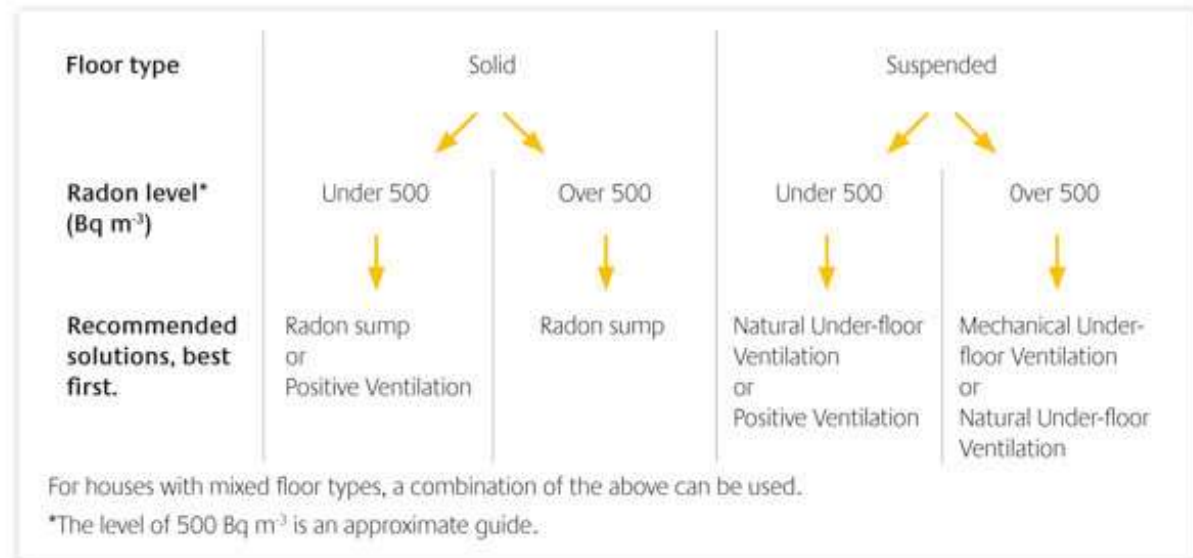
# Reducing Risk : Reduction

Aim :

Prevent entry from  
the ground or dilute

Method and Application:

Depends on the  
construction of the  
property and the result



See [www.ukradon.org/information/reducelevels](http://www.ukradon.org/information/reducelevels) & [www.BRE.co.uk](http://www.BRE.co.uk)

Post remedy  
retest!



Public Health  
England

# Summary

Two PHE radon YouTube videos; Radon, what can I do?



Radon, how it affects you.





Public Health  
England

# QUESTIONS.....



Nicky Hutt – [nicky.hutt@phe.gov.uk](mailto:nicky.hutt@phe.gov.uk)

General enquiries – [radon@phe.gov.uk](mailto:radon@phe.gov.uk)