

Radon in Workplaces

National Radon Forum
Galway
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Structure of Presentation

- Brief description of the RPII
- Review of legislation on radon in workplaces
- Review the extent of the radon problem in Ireland
- Describe how to carry out a radon survey and what is needed if high levels are found?
- Regulatory efforts 2006 and prosecutions undertaken
- Education and information efforts



THE RADIOLOGICAL PROTECTION INSTITUTE OF IRELAND

- Advisory Body
- Regulatory Authority
- Measurement Service
- Environmental Monitoring
- Information Service



National legislation on radon in workplaces

Two Sets of Regulations are applicable:

- 2005 Safety, Health and Welfare at Work Act (HSA).
- Radiological Protection Act, 1991, S.I. No. 125 of 2000. (RP11)



National legislation on radon in workplaces

- 2005 Safety, Health and Welfare at Work Act (HSA).
- General duty for employers in High Radon Areas to measure radon
- Radon must be included in Safety Statement



National legislation on radon in workplaces

Radiological Protection Act, 1991, S.I. No. 125 of 2000. (RPII)

- Specifies a Reference Level 400 Bq/m³, averaged over a minimum period of any 3 months.
- Authorises the RPII to issue directions and take prosecutions
- When directed, employers have 6 months to comply - that is carry out a radon measurement and forward results to RPII
- No general duty under this legislation



RPII and HSA

- In September HSA and RPII signed a Memorandum of Understanding.
- Radon gas was identified as a key area of co-operation
- This was an important development. In the long term should help ensure radon is a priority among employers.



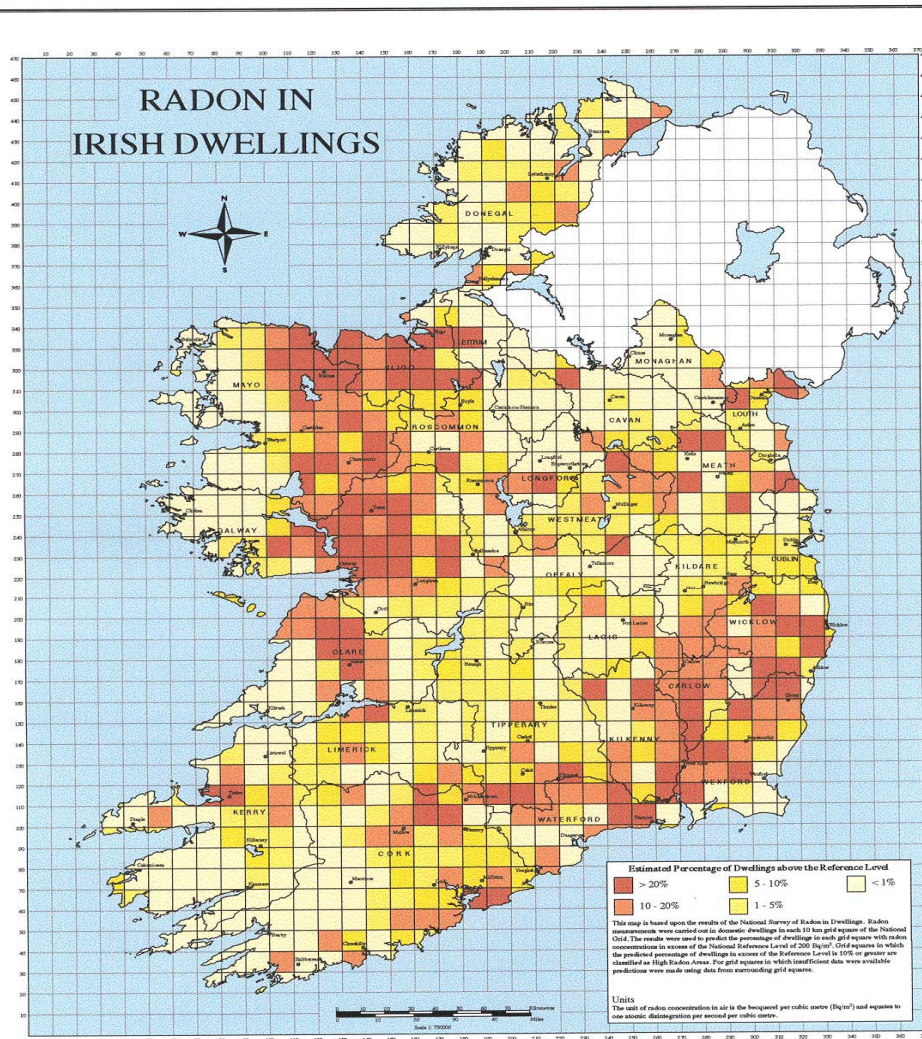
Extent of the radon problem in Ireland

National Radon Survey

Predictive Map of radon in Irish dwellings; 7% of homes predicted $>200 \text{ Bq/m}^3$

High Radon Areas:

10 km grid squares in which 10% or greater of houses are predicted to exceed the national Reference Level



Further Information:
Information regarding radon reduction techniques is available in a booklet entitled *Radon in Buildings* published by the Department of the Environment. This booklet can be purchased from the Government Publications Sale Office, Malpas Street, Dublin 2.

Detailed descriptions of the surveys on which this map is based have been published in the RPII reports *Radon in Dwellings - the National Radon Survey: Carra, Dublin, South, Monaghan and Wicklow* (RPII 91/1), *Radon in Dwellings - the National Radon Survey: Carra, Drogheda, Kildare, Athlone, Longford, Meath, Cavan, Leitrim, Sligo, Donegal, Roscommon and Westmeath* (RPII 91/2), *Radon in Dwellings - the National Radon Survey: Wick and Kerry* (RPII 91/3), *Radon in Dwellings - the National Radon Survey: Clare, Limerick and Tipperary* (RPII 91/4), *Radon in Dwellings - the National Radon Survey: Clare and Mayo* (RPII 91/5). These reports are available on the Institute's website (www.rpii.ie).



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What do we know about radon levels in Workplaces

- Data for workplaces is not yet as cohesive as it is for homes – no national picture
- RPII data
 - Since May 2000 around 11,000 measurements made, mainly in high radon areas
 - Schools around 41,000 measurements, nationwide
- Other approved services are starting to provide data
- ESB



What do we know about radon levels in Workplaces

- RPII workplace data
 - 11,000 workplace measurements, 4% > 400 Bq/m³ (majority in HRAs)
 - 41,000 school measurements, 2.3% > 400 Bq/m³ (nationwide)
 - Combining both datasets some 3% of workplaces measurements are > 400 Bq/m³
- Data from ESB <0.01%, > 400 Bq/m³
- Datasets from other approved services show 1%
 - 6% of measurements are above 400 Bq/m³



What do we know about radon levels in Workplaces

- Combining this data the best guess is that approximately 3% of workplace radon measurements are likely to be > 400 Bq/m³.



How many workers might be affected

- Exact data is not available
- What is the best guess ?



How many workers might be affected

- Assume 1 worker in each workplace that is high and 2 million workers in Ireland
- Deduct 497,900 “outdoor” workers.
(Construction, Transport and Agriculture)
- Around 45,000 workers may be in workplaces above 400 Bq/m³.



What employers need to know

- RPII guidance material
 - Concise brochure called “Radon – Radiation in Workplaces” published on RPII website also in your meeting pack.
 - Detailed guidance entitled “Planning Radon Surveys in Above Ground Workplaces” available on RPII website www.rpii.ie/radon.



What employers need to know

1. How to carry out a valid radon survey

RPII guidance recommends each occupied ground floor or basement workplace is measured: - >100 hours per year.

- Each individual office/workplace must be measured
- For open plan offices one detector per 200 m²
- For large warehouses one per 400 m².



What employers need to know

How to carry out a valid radon survey - ctd.

Measurement is straightforward. Radon detectors can be sent over the post and left in place for at least 3 months

The cost of a radon measurement is low. The cost of a radon detectors is ~€25 so to survey a typical office workplace say of 10 rooms is €250.

Measurement is a once off task there is no requirement for repeat measurements unless changes are made to the building



What employers need to know

2. Who can carry out a radon measurement in a workplace?

Criteria is specified in S.I. No. 125 of 2000.

- the radon measurement laboratory shall be accredited to EN45001, if based in Ireland.
- if in other EU state the laboratory must be accredited or approved by the relevant competent authority in that state
- four radon measurement laboratories in Ireland who are approved under the Order to carry out radon measurements in workplaces



What employers need to know

- Approved radon measurement services
 1. Radon Laboratory Services, Carrick-on-Shannon, Co Leitrim. www.rls.ie
 2. The Radon Centre, Kitestown Co Wexford www.theradoncentre.com.
 3. Radon Ireland Group , Macroom, Co Cork. www.radonireland.com.
 4. AlphaRadon teo, Dingle, Co. Kerry. info@alpharadon.ie.
 5. Radon Detection Ltd. Ballyfoyle, Co Kilkenny, www.radondetection.ie.
 6. RPII, Clonskeagh, Dublin 14. www.rpii.ie.



What employers need to know

3. What if radon levels are > 400 Bq/m³.

- Notify the RPII using standard notification form - requirement of the S.I. – form on RPII's website
- Action to reduce the radon levels is likely to be needed



What employers need to know

3. What if radon levels are $> 400 \text{ Bq/m}^3$ ctd...

Need for remedial action

RP11 recommends, in all cases, that early remediation is carried out.

Employers however may chose to carry out an evaluation to determine if remedial work is justified.



What employers need to know

The evaluation should consider:

- If radon levels are between 400 Bq/m^3 and 800 Bq/m^3 and radon exposure is $< 800 \text{ kBq/m}^3 \cdot \text{h}$ then no remedial work is needed. If $> 800 \text{ kBq/m}^3 \cdot \text{h}$ remedial work to be completed within 6 months.
- If radon levels $> 800 \text{ Bq/m}^3$ remedial work needed as soon as practicable but before exposure of $800 \text{ kBq/m}^3 \cdot \text{h}$ is reached.
- Otherwise system of radiological protection needed
- Full guidance on how to carry out an evaluation is on RPII's website www.rpii.ie/radon



Regulatory efforts and prosecutions taken

- May/June 2004, 60 employers in Tralee and Ennis were directed to carry out radon measurements.
- Once directed each employer has 6 months to carry out measurements and send result to RPII



Regulatory efforts and prosecutions taken

- Eight employers who had ignored the direction were prosecuted during 2006
- Three were convicted, fined and costs awarded
- Three were found guilty but not convicted
They were ordered to pay €500 to court poor box
- Two cases were dismissed



Information efforts 2004 -2006

- National Radon Forum
- Attracts media attention and well attended radon in workplaces is a significant theme
- Regional visits to High Radon Areas (HRA), where RPII met with local chamber of commerce



Other Initiatives

- Efforts by the State Claims Agency 2004-2005 to encourage state employers to measure radon
- Many public employers have carried out radon measurements. This is also true of larger employers, e.g. ESB.



Parallel awareness and enforcement actions

- These enforcement efforts ran in parallel with awareness efforts
- Since 2004 these efforts have required significant RPII resources
- However the efforts have given rise to a noticeable increase in workplace measurements suggesting that such efforts should continue



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Thank you for your attention



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