

RADON

A VIEW FROM THE OTHER END OF THE TELESCOPE

A presentation for and on behalf of

The Radon Council

by

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There is no getting away from the fact that radiation doses to the public from radon are more than a thousand times greater than those from the whole of the nuclear industry.....

There is no surprise in this, except to the wishful thinkers. It is now time for them to forget their daydreams. Radon is confirmed as the biggest radiation risk to the public by far.

Jon Miles – Excerpt from Radon Dreams - Environmental Radon Newsletter Winter 1998.

Radon is not only responsible for the highest domestic exposures to radiation, it also leads to the largest occupational doses. In some cases the doses are so high that if they arose from an accident in the nuclear industry a high profile prosecution would inevitably follow. Things are less easy when neither the individual concerned, the employer nor the enforcing agency are aware of the situation.

Gerry Kendall - Excerpt from editorial Journal of Radiological Protection.

COMPARATIVE ESTIMATES OF

ATTENDANCE AT MAJOR SPORTING INTERNATIONAL = 25,000+

WITH DEATHS IN THE UK OVER A 10 YEAR PERIOD

FROM RADON = 25,000

FROM PASSIVE SMOKING = 10,000

FROM ACCIDENTAL FIRES IN THE HOME = 3,000

FROM NEW VARIANT CJD = 150

WHY SUCH LITTLE INTEREST?

**COULD IT BE THAT BECAUSE RADON IS
NATURAL – THERE IS NO ONE TO BLAME?**

**OR THAT ANYTHING THAT UPSETS THE
VALUATION OF A PROPERTY IS BAD
NEWS?**

INTRODUCTION TO THE RADON COUNCIL

The Radon Council is a non-profit making self regulatory body.

It is NOT a trade association and was established 13 years ago as a Regulatory Body for the UK radon industry and consumers.

It came about in response to a request from a Parliamentary Select Committee Report on Indoor Environmental Pollution, for just such an organisation to provide regulation, in order to combat the “cowboy elements” that were beginning to enter the radon field.

Its primary objective is to protect the public and not industry.

Despite its origins the Council has rather surprisingly never received any funding from UK governmental or public agencies.

Functions of the Council

Maintain a Code of Good Practice.

Publish “The Radon Manual”.

Provide Training Courses, with examination.

Award of Certificate and CPD points to successful candidates.

Maintain an annual List of Contractors.

Radon Council Services.

Provide a telephone information service.

Provide and maintain a radon website in association with the Universities Radon Network.

www.radonhotline.org

Collaborate with ERRICCA and other International programmes.

www.euradoncouncil.com

Training Course Content

An intensive whole day course which on completion is eligible for CPD points.

Radon and Health risks.

Detection methods.

Health and Safety Legislation.

Radon remediation.

Radon in new-build: Sumps and Barriers.

Environmental law.

Lecturers' Forum.

Personal study.

Examination.

Main Radon Council Policy

Start to reduce the 2500 avoidable annual deaths in the UK.

Over time test all UK homes.

“To Test is Best”.

Adequate testing and remediation knowledge already in public domain.

Maintain and where necessary raise standards.

The Radon Council is concerned at the avoidable and tragic waste of 2,500 lives each year from radon. Despite numerous initiatives tried over the past decade, at substantial cost to the taxpayer, **many people are still unaware of the danger.**

The Radon Council is advocating a revision of national policy in order to eradicate this menace and start to reduce these unnecessary annual deaths, by the following means:-

- 1) Make a minor revision to CON 29 and to include radon in the proposed Home Information Packs (HIPS).
- 2) All homes both **new and old** should be required to furnish a valid and recent radon test certificate at the time of conveyancing.
- 3) Any homes found to have radon levels in excess of the current action level, should be remediated.

Over the past two years the Radon Council has had numerous telephone calls and some correspondence from puzzled consumers asking what a 1% or 3% possibility of there being radon in their home can mean.

The answer is quite frequently whether in ‘bad’ or ‘good’ areas it means very little. Like drains, woodworm, dry rot or roof faults,

“To Test is Best”

is the only 100% reliable guide to any individual home and could be a lifesaver into the bargain.

THE LIFE YOU SAVE MIGHT BE YOUR OWN!

WHY SHOULD NEW HOMES BE TESTED?

Although new homes allegedly complying with Building Regulations will frequently include a “radon membrane” and some even a “radon sump”, experience shows that unless these are specified and installed correctly, high radon levels can still occur.

An estate at Higham Ferrers in east Northampton, where the probability of radon is said to be in the 3% - 10% band was tested.

Results showed that 35% of the properties were over the action level.

Even though they were classified as only requiring secondary protection.

The following survey conducted by University College Northampton and Northampton General Hospital illustrates the problem.

A Study of the Efficacy of Radon Proof Membranes

Prof A.Denman, Prof P.Phillips, and Dr R.Crockett



Northampton General Hospital 
NHS Trust

Introduction

- Since 1992, New Houses in UK Radon Affected Areas must be built with radon protection. In affected areas, this takes the form of a radon proof membrane as the damp proof course, sometimes with the addition of a sump or additional air bricks.
- Minimum specification is 300 μm polythene sheet, extending over the cavity wall. (BRE Document, BR211)
- UK practise does not require a radon test in such new homes, and the developers rarely have an effective procedure that informs buyers that the area is radon affected, or that radon preventative measures have been taken.

Study Area

- The UK Action Level for domestic properties is 200 Bq m^{-3}
- Brixworth (NN6 9..) is in Northamptonshire, in an area where 17.7 % of houses have been found to be over the action level.
- 444 new houses have been built in Brixworth, on a large development with three main builders, since 1992.

Measurements

- The NRPB Measurement Protocol uses two track etch detectors placed for three months – one in the bedroom, one in the main living area
- The weighted average of these two measurements is seasonally corrected, and compared to the Action Level
- This methodology was adopted for this study, with an exposure time of 90 ± 2 days.
- 100 Householders in new houses were offered a free radon tests. 63 returned detectors, of which 3 were spoiled, leaving 60 usable results.

Study Results

- The results have a log-normal distribution
 - Showing that sample is not biased
- 6 houses (10 %) over Action Level
- Our recent DEFRA-funded study showed that the equivocal range for 3 month track etch detectors is 112 to 356 Bq m⁻³
 - Above 356 – definitely abnormal
 - Below 112 – definitely OK
 - Between 112 and 356 – result should be repeated
- 14 houses in equivocal range (23.3 %)
- 1 (1.7 %) definitely abnormal

Analysis

- If the membrane works then all results should be below the Action Level
- It is not possible to have a direct comparison to a control group
- However, NRPB showed that 17.7 % existing houses in the local area (Brixworth and some adjoining villages) were over the Action Level
- Thus the membrane provides inadequate protection in over 50 % of cases.

Irish Study

- A similar study was conducted by Synnott *et al* in two areas in Ireland
- Legislation require a BBA Accredited Membrane
- Results were similar
 - 11/90 (12 %) in an area where 27 % of existing homes were over Action Level
 - 9/44 (20 %) in an area where 45 % over AL

A Survey of the Impact of Amending Building Regulations on Radon Concentrations in Irish Homes, H.Synnott, D.Pollard, P.A.Colgan, and D.Fenton, Proceedings of IRPA11 Congress, 2004

Conclusions

- The pilot study suggests that radon-proof membranes used in UK new homes do not always provide adequate radon protection
- The results are similar to an Irish study
 - The likely cause is damage to the membrane during building
- There is currently no requirement to test new houses in the UK
- This study indicates that it is essential to make radon measurements in new houses, in order to identify those where the membrane provides inadequate protection

RADON TESTING FOR EXISTING HOMES.

The need to test existing (or old) homes is obvious.

The size of the existing housing stock determines that these properties will result in by far the largest number of homes found to be affected by high levels of radon.

It has been suggested that because radon levels can be affected by life-style then in the absence of a radon test certificate the purchaser should move in and test after occupancy. Any buildings found to have high levels could then be remediated and the cost presumably clawed back from the vendor.

WOULD YOU BUY A SECOND HAND MOTOR CAR ON THE SAME BASIS?

Who would wish to buy a second-hand motor car, that might have a latent defect, on the understanding that it could be corrected later if the purchaser's style of driving caused it to materialise.

The Radon Council is totally opposed to this suggestion and advocates the policy of testing all properties at the time of conveyancing. In this way a purchaser will know what they are buying.

TO TEST IS BETTER THAN A GUESS

It is argued by some that meaningful tests cannot be conducted at the time of conveyancing.

This is not the case. Reliable and internationally accepted testing methods for measuring radon already exist, providing the correct interpretation is placed on the results.

These can be as short as 7 days which is a timescale that does not delay the conveyancing process, or as long as 3 months, a test that can be conducted in many cases well ahead of the sale.

It is important to appreciate that all essential techniques for testing and carrying out adequate radon remediation work are already in the public domain. The Radon Council publishes an annual list of approved contractors, well able to provide services or undertake this work.

Ultimately all properties should be included. This not only means NEW and EXISTING HOMES, but SCHOOLS, HOSPITALS, and WORKPLACES as well.

We operate stricter gas protection regimes against landfill and brownfield gases, which are less dangerous, than we do against a known killer.

LIST OF CONTRACTORS....

The Radon Council publishes an annual list of contractors who have reached an acceptable level of competence and have demonstrated a knowledge of building techniques.

Every entrant has to sign a written contract with this Council and follow a Code of Conduct as well as produce evidence of valid Liability Insurance.

A RECENT COMPLAINT

This is not always the case with contractors who have not received adequate training. The Radon Council has recently received a complaint from a private householder about work carried out by an “*approved contractor*”.

The example showed a disregard for the IEE Wiring Regulations, undermined the fabric of the building and caused an electrical fault when it rained.

This contractor has not attended a Radon Council training course and does not appear on the Radon Council’s list of contractors.

COMPLAINTS PROCEDURE

As part of its Duty of Care the Radon Council has a complaints procedure.

A Disciplinary Group comprising a chartered chemist, a chartered engineer, a master builder and a legal advisor are available to investigate any complaints received by the Council concerning anyone appearing on our published list.

A few cases have already been considered over the past years and resulted in a successful conclusion for the consumer.

Unfortunately the contractor responsible for the work described in the previous example is not known to the Radon Council and as such we are unable to mediate directly.

The Future

The Radon Council is of the opinion that only when these recommendations have been adopted will a start be made to reduce the unacceptable annual waste of life from radon.