Irish National Radon Forum
Thursday 18th November, Red Cow Hotel, Naas Road, Dublin
Report of Proceedings

Preamble

The purpose of this report is to reflect the content of the third national radon forum held in Dublin on the 18 November 2004. This report does not purport to be an absolute account of all matters discussed. Moreover the views expressed in this report should be regarded only as the expression of the views of the individuals concerned and should not necessarily be viewed as an expression of policy of the bodies that they represent. A list of attendees at the forum is given on the appendix of this report.

Introduction and brief Overview

The 3rd National Radon Forum was opened by Dr Ann McGarry Chief Executive of the Radiological Protection Institute if Ireland (RPII). Dr McGarry welcomed everybody on behalf of the RPII and Remedia the joint organisers of the Forum.

Dr McGarry reiterated the importance of radon gas due to it being the largest contributor to the total radiation dose received by the Irish population. The RPII continue to encourage homeowners and employers to carry out measurements. Dr McGarry said it was important that the measurement laboratories, government agencies and remediators worked together to reduce the exposure of the Irish public to radon.

This is the final year of the European Radon Research and Industry Collaboration Concerted Action (ERRICCA) project. To date this project has part funded the previous National fora. Due to the importance and success of the fora the RPII will continue to organise such events in the future.

Session 1 Industrial Forum
Chairman: Dr Tony Colgan, Principal Scientific Officer, RPII

Presentation 1: Public Awareness of Radon
Mr Chris Scivyer, Senior Scientist, Building Research Establishment (BRE), UK

Mr Scivyer outlined the extent of the UK's radon programme. He then described the radon roll out programme in the UK which is a Local Authority fronted initiative, the objective of which is to increase the number of householders carrying out radon remediation. He then gave examples of the radon roll out programme in the Kerrier district of Cornwall. Mr Scivyer concluded his presentation by giving examples of what has been learned by participating in such initiatives.

Presentation 2: FÁS Training Programme on radon gas remediation and prevention
Mr Kevin Sheridan, FÁS

Mr Sheridan gave an overview of the FÁS course on radon remediation and prevention. He explained that the implementation of this course was originally driven by the proposed future introduction of a grant scheme for radon remediation.

Presentation 3: Radon Prevention in new buildings: Part C of the Building Regulations and TGD C (1977); and amending Part C/TGD-C (2004)
Ms Sarah Neary, Inspector, Department of the Environment, Heritage and Local Government.

Ms Neary's presentation outlined the changes incorporated in the new edition of Technical Guidance Document-C (TGD-C) of September 2004 regarding the protection of new buildings from radon gas.

Presentation 4: The Radon EuroCode – Harmonized European Code of Design and construction practice on protection from Radon in buildings
Mr C J Walsh, Consultant Architect, Sustainable Design International

Mr Walsh presented a European view of what is happening regarding EuroCodes, in particular the radon EuroCode and outlined its history and benefits. The 6th draft of the EuroCode will be available towards the end of January 2005.

Presentation 5: Radon Protection – A contractor perspective
Mr Gerry Cunningham, Radoncare

Mr Cunningham gave his outlook as a radon contactor involved in laying radon membranes and as a mitigation provider.

Mr Cunningham stated that if you have good materials and a radon membrane is laid correctly you could have 95% confidence in it being successful. Unfortunately in practice this is not the case. When it comes to laying the membrane difficulties arise such as approaching deadlines, incorrect foundation construction, incorrect installation of pipe work, adverse weather conditions, etc.

In larger buildings like schools and workplaces etc. it may be necessary to lay the membrane in stages. This can lead to problems with joining the membrane to ensure a gastight seal.

Some local builders may not be familiar with the TGDs and therefore the work may not be carried out correctly.

Mr Cunningham gave an example of a potential problem that a builder could be faced with. A young couple had their new home tested. The results of the test were high with the average reading of 900 Bq/m^3. This house should have both a membrane and a sump. Unfortunately the sump cannot be located or wasn't put in place. The builder will have to remediate this house and possibly the 11 other houses in the development.

To ensure the correct installation of a membrane, three things must be considered

- Preparation of the site
- Supervision of the work
- Protection of the installed membrane by the main building contractor.

Presentation 6: Radon contracts, maintenance and service
Mr Alan Ellard, Radon Ireland Group

Mr Ellard explained that remedial contractor should properly explain the planned remedial work to their client. The client must be informed that radon remediation is for life and once installed, active systems must be properly maintained and serviced.

Radon Ireland has recently designed a wireless monitoring unit that is connected to the sump. Should the fan connected to the sump fail, an alarm is raised. The office of Radon Ireland is notified and the problem can be rectified quickly. Two of these units are currently in use; one in a house in CastleIsland, Co Kerry that was identified by the RPII as having annual average radon concentrations of approximately 49,000 Bq/m^3 and the second is in a school in Cork. The unit also monitors power and vacuum levels. All information for each unit is stored on computer so may be printed out at a later stage for analysis.

Presentation 7: Radon Protection - Value for money?
Mr Micheál O'Gabhláin, Remedia Ltd

Approximately 200 deaths are caused in Ireland each year by lung cancer induced by exposure to radon. The house construction industry spends almost 11 million in an attempt to reduce these numbers of deaths. The expenditure is regarded as good value when compared with expenditure with other lifesaving programmes, for example road safety.

Existing Houses
One apparent anomaly is that expenditure is concentrated on new houses. In Ireland 91000 existing houses have radon concentrations above the Reference Level. With regard to new houses 5000 to 6000 houses per year are likely to be above the Reference Level unless protective work is undertaken. All expenditure is concentrated on new houses and none on the existing 91000 houses.

Mr O'Gabhlain stated that for existing houses a grants system and a radon check during the conveyencing process could significantly reduce the number of existing houses with radon concentrations above the Reference Level.

New Houses
Mr O'Gabhlain proposed the following alternative strategy for new houses:

- No protection for new houses
- Radon measurements on completion
- Remediate houses over the reference level.

Discussion Morning
The following discussion took place directly following Mr Sheridan's presentation

FÁS will be issuing certificates to successful participants in the coming weeks from their February 2004 course. Participants who failed will be invited to re sit the exam.

If there is sufficient interest FÁS will re visit the issue of awarding certificates of competence to participants who have successfully remediated buildings with high radon levels. The major difficultly envisaged with this competency assessment is the overall time taken to carry out all the steps required for a participant to demonstrate competence. This could take approximately 9 months.

Mr Scivyer also pointed out that certain parameters need to be established in relation to what constitutes successful remediation.

Kevin Comican asked whether there should be a training course similar to the existing FÁS course on the practical aspects of radon remediation.

Mr Sheridan replied that this was not within the scope of the original programme but added that providers of membranes could provide some training on that end of the business.

Mr Eugene Monahan of the Radon Centre enquired as to whether information gathered from the schools survey could be used in determining the competence of a remediator.

Mr Sheridan replied that the remedial systems for schools were not designed by the individual remedial companies and that they would not be suitable to demonstrate the competence of a remediator.

The following discussion took place following the final presentation in Session 1

Mr Tony Briscoe IBEC made the point that there is considerable commercial activity in both radon measurement and remediation. He then asked questions concerning radon and radon remediation, particularly why the reference level in homes differed from that of workplaces and is the remediation solution effective in all cases.

Dr Colgan replied that the lifetime risk associated with exposure to radon concentration at the 200 Bq/m^3 Reference Level in homes is equivalent to other everyday risks such as being fatally injured in a road traffic accident. The lifetime risk associated with exposure to radon at the workplace Reference Level of 400 Bq/m^3 is less. The reason for the lower acceptable risk from radon exposure in workplaces compared to domestic environments is because radon concentrations to which a worker is exposed in their workplace is to some extent imposed upon them, whereas in a domestic environment the householder determines what radon levels are acceptable.

Mr Scivyer addressed the question regarding solutions. The remedy to the problem is usually clear. The success rate is good but not 100%.

Mr Monahan enquired whether the Department of the Environment, Heritage and Local Government (DEHLG) have considered compulsory testing in new builds.

Ms Neary stated that currently the DEHLG recommends a post construction test.

Mr Michael McCarthy of the DEHLG added that at present the Minister has no proposals to introduce mandatory post construction inspections. He added that he was unaware of any member state in the EU who had introduced mandatory radon measurements post construction.

Are positive pressurisation systems and sumps being used to mitigate buildings with high radon concentrations?

Yes to both. Mr Ellard pointed out that when a radon problem is found you may also find a ventilation problem. Values of up to 700 Bq/m^3 can be reduced successfully with positive pressurisation. Anything above that would require the use of a sump.

Mr Ellard said people prefer to have a passive system, as there is no work required after construction. Some people also believe that their property is devalued due to the sight of the external pipe work of the sump system.

Mr Scivyer pointed out that sealing of cracks and imperfections in floors is often very effective if there are large holes around service pipes. Positive pressurisation is helpful where a house has a condensation problem, and sumps are not effective for suspended timber floors (use sub floor vents).

Dr Jim McLaughlin UCD observed that the results of the Ennis survey would indicate that the use of a radon membrane is ineffective. Should we therefore continue to use them in the future or do post construction testing.

Mr Neary stated that the results of the Ennis & Tralee surveys showed that there was a reduction in peak radon values indicating that the Building Regulations have had an impact. The DEHLG can only offer guidance on the information at hand. The amendments to the Building Regulations in 1997 have resulted in other European countries introducing similar guidance. The new (2004) guidance now includes a recommendation to householders to carry out a test in a new building once occupied. Home Bond have been informed.

Mr McCarthy also pointed out that problems might arise when a builder constructs a house for the first time under the Building Regulations.

Mr Ger Lally Radon Centre stated that radon membranes were not as effective as initially thought. He supported Michael O'Gabhlain's approach on costs and enforcement. His ideas should be investigated further. Sump performance still exceeded that of a membrane.

Mr Walsh then made the point that correct radon membrane installation is not the only consideration but membrane quality and design are also important. He pointed out that some DEHLG diagrams detailing radon membrane installation show the membrane below ground level. He advised all to look at the Czech Republic's methods of protecting new buildings

from radon. He also did not agree that Ireland is at the forefront in dealing with the radon problem.

Ms Neary responded by saying that are no DEHLG diagrams detailing radon membrane installation below ground level.

Mr Tim O'Neill, Necoflex asked why sumps and membranes can't be used in all new homes.

Ms Neary stated that the Building Regulations stipulate the minimum requirements. The two-tiered approach to radon preventative measures in new dwellings originated from the publication of the Radon in Irish Dwellings Map. She added that the cost benefit analysis carried out by Mr O'Gabhlain did not show that the cost of installing membranes in every new home was justified.

Dr McLaughlin commented that by building houses directly on the ground as was the practice in this country we are effectively constructing radon collection devices. He then asked should designers put radon membranes in all new buildings.

Mr Scivyer then made the following points:

- In UK membranes are required in areas with > 3% risk of having radon concentrations above the UK reference level of 200 Bq/m^3
- Unprotected houses are built to modern standards
- He stated that membrane failure in the UK was approximately 1% and that this was caused mainly by poor workmanship.

There was some discussion over the use of the Radon in Irish Dwellings Map. Dr McGarry RPII pointed out that the map is a radon prediction map and it's main purpose is to identify areas of the county that are most at risk of having a radon problem.

Session 2 Radon in Workplaces and Homes

Chairman: Dr James McLaughlin, UCD

Before Mr Scivyer's presentation Dr Colgan informed the attendees that changes are currently taking place in the Irish conveyencing laws. Deadline for submissions is December 31st 2004 should anyone like to comment/contribute.

Dr McLaughlin mentioned two upcoming conferences;

- Indoor Air – Beijing, 2005. There will be a session on radon.
- Healthy Buildings – Lisbon, Jun 2006. There will be one/two sessions on radon.

Presentation 8: Consideration of Radon in the buying and selling of houses in UK and Europe

Mr Chris Scivyer, Senior Scientist, BRE, UK

In this presentation Mr Scivyer outlined the issues involved when considering radon in the buying and selling of houses. His presentation focussed mainly on the situation pertaining to the UK.

Presentation 9: The RPII's workplace campaign: review and the way forward

Mr David Fenton, Senior Scientific Officer, RPII

Mr Fenton's presentation reviewed the RPII's workplace campaign and outlined its proposed future direction.

The main areas covered in this presentation are as follows:

- Efforts to raise awareness at national level of radon
- Legislative framework
- Legal Route – directions and prosecution
- Future Strategy

Mr Fenton pointed out that the RPII does not have a direct role in formulating or policing the Building Regulations but work carried out by the RPII is taken into account when the Building Regulations are revised. He reviewed the legislative framework governing radon in the workplace. There is no general duty under S.I. No. 125 of 2000, this is under 1989 Health and Safety at Work Act and outlined the work done by the RPII in raising awareness of the radon issue among employers.

Presentation 10: Radon in State Buildings

Mr Pat Kirwan, Head of Risks and Operations, State Claims Agency

The State Claims Agency recently identified radon as a risk of future litigation arising from cases where employees suffering from lung cancer may claim that employers did not put in place the required control measures to minimise the risk of exposure to radon. In this presentation Mr Kirwan reviewed the efforts made by the State Claims Agency in encouraging state employers to measure radon in their buildings.

Presentation 11: The measurement of radon in Irish domestic groundwater supplies

Dr Savio Sequeria, Scientific Officer, RPII

Dr Sequeria presented the results of a survey of radon in drinking water in Co Wicklow. This was published in 2003 by the RPII.

Discussion after Mr Scivyer's presentation on conveyencing process in the UK:

Mr Walsh updated the audience on the situation in the Czech Republic with regards to the remediation grant to householders: the grant is allocated only if a post-remediation measurement is carried out which proves that a reduction in the radon concentration has been achieved. If no post-remediation measurement is done, the grant is not allocated.

Mr Ellard said he favoured developing a short-term measurements concept in Ireland at the time of selling-buying point.

Dr McLaughlin stated that the problem with the short-term measurements is not their accuracy, but how representative they are of the "true" radon concentration.

Dr McLaughlin added that we should strongly consider targeting banks and financial institutions in Ireland and try to convince them of the radon issue. They are the ones who have the power to request people to test their homes.

The following discussion took place following the final presentation in Session 2

Mr Walsh sought clarification on why the radon Reference Level in schools has risen from 150 Bq/m^3 in the mid 1990's to 400 Bq/m^3 at present.

Mr Kirwan stated that the figures from the Dept of the Education were only used in this case for extrapolation reason, to get an idea of the costs involved if all Government agencies were to measure radon levels.

Dr McLaughlin added that the exercise carried out by the SCA had to be viewed from a workplace point of view, not from a member of the public point of view.

Mr Fenton explained that an advisory Reference Level of 200 Bq/m^3 was set for schools prior to the start of the school's project in 1998. The Department of Education and Science (DES) had agreed that all classrooms or frequently occupied areas in schools with radon concentrations above this level would have remedial work carried out. In 2000, the Radiological Protection Act 1991 (S.I. no. 125 of 2000) specified a statutory Reference Level in workplaces of 400 Bq/m^3. Since schools are workplaces, this reference level also applies to schools. Therefore two Reference Levels now apply to schools an advisory Reference Level of 200 Bq/m^3 and a legally binding Reference Level of 400 Bq/m^3. The DES policy regarding remedial work in schools which remained largely unchanged is to carry out remediation in all rooms with radon concentrations above 200 Bq/m^3 identified in the initial survey. However they will take no further action in the case of schools that following remediation that still have radon levels between 200 and 400 Bq/m^3. The DES will in all cases fund work to bring levels below 400 Bq/m^3.

Mr Monahan asked Mr Kirwan whether radon in county council homes was an issue.

Mr Kirwan replied that local authority homes do not come under the remit of the SCA.

A question was asked enquiring where one would have to go to have a radon in water test carried out.

Dr Sequeria replied that the RPII carry out a radon in water test. He then went to explain what was involved in carrying out a test.

Mr Liam Tinney FFS Systems enquired as to the efficiency of remediation in schools equipped with vents?
Mr Hugh Synnott RPII answered that 40 to 50% reduction was achieved in those rooms equipped with vents. They are not as consistent as sumps, but generally, they work quite well.

Mr Ellard asked Mr Kirwan whether the SCA had thought about implementing a maintenance programme (on the long term) for those State Agencies which will need to be remediated.

Mr Kirwan answered yes and said that it will probably be the role of the Building Maintenance Unit in each Agency to look at this issue.

Mr Ellard stressed the importance of this aspect in the remediation process.

Mr O'Neill enquired whether any figures were available that show the increase in interest in radon from members of the public.

Mr Fenton stated that based on the number of detectors issued by the RPII to workplaces in 2004, the number has doubled since last year. A similar doubling figure has been achieved for domestic measurements as well.

Mr Ellard added that his company has issued 2000 detectors in the last 6 months and that his group had projected a total number of detectors issued each year of 4000.

Mr Fenton highlighted the fact that in the future, efforts will be made so that an agreement is reached between the existing radon measuring companies for workplaces registration purpose, although the onus is on the employer to declare that his workplace is exceeding 400 Bq/m^3.

Mr Ellard mentioned the fact that most of the workplace measurements his company has carried out were requested by State Agencies, not self-employed or private companies.

Dr McLaughlin asked Mr Fenton whether the role of the Health and Safety Authority (HSA) in the workplace legislation had been clarified.

Mr Fenton stated that last year the HSA stated that radon should be in the Safety Statement of every workplace and that radon had to be measured in workplaces in High Radon Areas. However since that time it would appear that the HSA were unable to give priority to radon. He said he was hopeful that this situation would change. However, the HSA's statement is still valid.

Dr Sequeria asked Mr Walsh where the figure of 150 Bq/l for radon in the water came from in his presentation.

Mr Walsh explained that it should be looked at as minimum achievable target when reducing radon levels in the water because 1000 Bq/l of radon in the water theoretically adds 100 Bq/m^3 in the air.

Dr Sequeria asked Mr Ellard whether radon in water was an important issue debated at this conference in the States that he recently attended. The answer is very much so.

Dr McLaughlin added that is well known that workers in water treatment stations can receive large radiation dose from exposure to high radon concentrations in the States. In Ireland, it shouldn't be a problem as most of the water supplies are from surface waters.

Dr Colgan closed the meeting by thanking the speakers and all those who attended for their participation, particularly in the discussion sessions.

Appendix 1

List of Attendees

Mr Chris Scivyer	BRE	ScivyerC@bre.co.uk
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