5th National Radon Forum
Report of Proceedings

Introduction

This document reviews the discussion sessions of the fifth National Radon Forum held in Galway on 16th November 2006. This document does not purport to be a comprehensive report of the day's proceedings. The reader is invited to view the agenda and presentations which are available on the Radiological Protection Institute of Ireland's (RPII) website. These presentations together with this report should give the reader a flavour of the topics discussed. Appendix 1 lists the Forum attendees.

First session: *Ways of addressing radon: globally and locally*

1) A representative from Clare County Council asked Mr Denis Holland (South Tipperary County Council): if they had requested more funding for Local Authorities from the central government?
Mr Holland replied that South Tipp. County Council Housing Section has made contact with the Dept. of the Environment Heritage and Local Government (DoEHLG) who had agreed in principle to provide funding. In general, the DoEHLG have been very helpful.

2) Mr Robert Larmour (Dept of the Environment, Northern Ireland): commented that they encourage good practice with regard to respecting the Building Regulations. Their departmental Planning Section holds an annual forum where these issues are discussed.
Mr Holland and Dr Hajo Zeeb (World Health Organisation, WHO) agreed that builders' awareness is crucial in this regard. WHO is also working in this direction.

3) A representative from the office of the Principal Health Environment Officer (Waterford) asked Dr Zeeb if international studies which attempt to quantify the risk of contracting lung cancer from radon exposure were taking the effect of smoking into account?
Dr Zeeb replied that the epidemiological studies were taking all possible confounding factors into account of which smoking is the most dominant. They have shown that for every 100 Bq/m^3, the relative risk increases by 16%. A minority of deaths take place for exposure above 200 Bq/m^3, but the majority of lung cancer cases / deaths occurs below 200 Bq/m^3.
Dr Tony Colgan (RPII) added that as far as radon is concerned efforts need to be made to lower the average radon concentration in the country, through proper implementation of the building regulations and to find the people most at risk by identifying and fixing homes with the highest radon concentrations. Also, 80,000 new homes are being built in Ireland every year, so the number of homes currently with radon concentrations above the Reference Level is likely to be increasing.

4) Dr James McLaughlin (University College Dublin, UCD) commented that most epidemiological studies show that the risk of developing lung cancer from radon exposure increases by 16% for every 100 Bq/m^3, irrespective of the smoking status. This means that the same increase applies to smokers and non-smokers. However, the absolute risk is lower for non-smokers. Dr McLaughlin thinks that the link between radon and smoking needs greater emphasis in all awareness campaigns.
Dr Zeeb agreed that most radon lung cancer deaths occur among smokers and that both issues (smoking and radon exposure) have to be tackled. The problem is how to communicate this dual message. Radon is also something that smokers should be made aware of, so the message for them is give up smoking and test for radon.
Mr Fenton made a clarification in the terminology to be used when using the term non-smoker. That it is life long non-smokers who are at the lowest risk from radon. Ex-smokers (even though they may be non-smokers) remain at an increased risk from lung cancer for many years after giving up smoking. However, this risk is much lower than for those who continue to smoke. Approximately 10% of the 200 lung cancer deaths in Ireland will affect life long non-smokers

5) Mr Anthony McLoughlin (Radon Aware Group) asked Mr Holland how does a local authority deal with damaged radon membranes?
Mr Holland explained that this is a private issue between the builder and householder.

6) Mr Martin Fitzgerald (Dublin County Council) asked Dr Zeeb if children were at increased risk from radon exposure?
Dr Zeeb explained that children are at an increased risk because their exposure takes place over a much longer period of time i.e. it starts earlier in life. WHO will make stronger recommendations to protect children, and to focus measurements on schools.
Dr Colgan added that in Ireland, the Dept. of Education and Science (DES) has monitored all primary and secondary schools, identified those with high radon levels and has taken action to fix them.

7) Ms Teresa Curley (DES) further explained the DES policy on radon in schools. She also asked Dr Zeeb if the WHO is an advisory group only? She went on to ask whether it is possible that in the future WHO will come up with stronger recommendations to lower the Reference Level for radon in schools?
Dr Zeeb confirmed that WHO did not have any enforcement power, but that when WHO declares or recommends an action, it is usually taken seriously by policy makers.

8) Mr Eugene Monahan (The Radon Centre) commented that a recent RPII statement indicated that it was now a requirement under the 2005 Health and Safety Act to test for radon in all workplaces located in High Radon Areas. However, when he contacted the Health and Safety Authority (HSA), he was told that there was no such obligation. He was told that a Memorandum of Understanding (MoU) was being signed and in the meantime to contact the RPII for further information.
Dr Ann McGarry (RPII) confirmed that the MoU had been signed in September, so there was now a written document from the HSA stating that radon was now included

in their considerations. The MoU provides for the establishment of a working group RPII/HSA to look at the radon issues in the workplaces and how these can be tackled efficiently.

9) A member of the audience asked if the risk of lung cancer as a result of radon exposure was lower in a two-storey house?
Dr Zeeb replies that ground floor levels are usually more susceptible to high radon concentrations. Mr Fenton explained that by measuring the levels in the bedroom and in the living area, we assess the situation where the risk is the highest in terms of those parts of the house that are most occupied. He added that a confident prediction of the radon levels cannot be made solely on the construction of the house and the only way of being sure was to measure.

Second session: ***Geology and radon mapping***

1) Mr Fenton commented that production of more detailed radon risk maps required a lot of work and the results obtained by the HPA were impressive. But have these maps helped increase the number of measurements in the UK?
Mr Jon Miles (UK Health Protection Agency, HPA) replied that these kind of maps help identify more accurately the homes that need to be measured; it helps target the efforts and focus on well defined areas, therefore increasing the chance of identifying high homes.

2) Dr McLaughlin asked Dr Eibhlín Doyle (Geological Survey of Ireland, GSI) if the airborne survey and more specifically the potassium channel of the radiometrics had the potential to identify 'heavily' fertilised areas?
Dr Doyle explained that the 'potassium technique' had never been tested yet or been used anywhere else and that it was only an idea at this stage. The data will need to be interpreted closely to see if it can be applied in practice.

Dr McLaughlin then added that it was not uranium which was detected by the radiometrics but a radon progeny- bismuth-214. Karstic limestone usually have very low concentrations of uranium but are known to favour conditions for high radon levels in homes so it is expected that the bismuth (from the radon) will be detected by the airborne survey and will then be transformed into a uranium signal (also called equivalent Uranium, eU). Namurian shales, on the other hand, are rich in uranium and the airborne survey should also identify outcrops of this formation. So, on the one hand, the radiometrics will give a high eU signal for two different types of rock, the uranium-rich deposits (shales) and for the uranium-poor but radon daughter rich limestone. How can they tell the difference?
Dr Doyle explained that what the GSI was interested in is to see if there is a correlation between the eU signal and high radon concentration in homes.

3) Mr Larmour commented that there was no significant increase in householders requesting radon measurements after publication of the Northern Ireland radon map

in 1999. However, more significantly, this new information was used to carry out targeted information campaigns and road shows. When the radon profile is raised in the media, it is a great opportunity to highlight the risks of exposure to radon to the public The DoE in Northern Ireland are also working very closely with banks and building societies (when the public apply for a loan to build a house).

4) Mr Neil Hanaphy (Radon Detection Ltd.) added that if the radon measuring companies know where there is a problem with radon, this greatly helps them to target their efforts, so accurate radon maps are a very valuable tool for them, and he welcomed any update of existing maps.

5) Dr Colgan added that the RPII has always focused its efforts on High Radon Areas. The National Radon Survey has predicted that 7% of the national housing stock would have radon concentrations > 200 Bq/m^3, but based on all the homes measured in the last five years, the RPII has found that approximately 15% of these had radon concentrations in excess of 200 Bq/m^3. This indicates that the RPII was right in its predictions and in its targeting efforts. He also added that many, if not all, of the 60 homes with the highest radon concentrations measured in the country seem to be in High Radon Areas.

6) Mr Chris van Schoor (Kerry County Council) asked Dr Doyle when will the airborne survey results be available?
She replied that the earliest expected time will be sometime in 2007.

Third Session: ***Radon in workplaces***

1) Dr McLaughlin asked if insurance companies had been targeted as a possible way to get more householders and workplaces to carry out radon measurements.
Mr Fenton replied that during 2006 the RPII gave presentations on radon to Allianz and the Association of Irish Risk Managers. These presentations were well received and are having a positive impact.

2) Mr Miles expressed surprise at the difference between the proportion of measurements in schools and in Electricity Supply Board (ESB) premises with radon concentration above the workplace Reference Level of 400 Bq/m^3. The schools survey found that approximately 2.3% of all measurements were above the Reference Level whereas the corresponding figure from a nationwide survey of ESB buildings was approximately 0.01%.
Mr Fenton replied that the most probable reason for this difference was a difference in the types of buildings that were surveyed. School classrooms and offices tended to be quite small and not particularly well ventilated in contrast to the majority of ESB premises.

3) Ms Curley enquired whether any inter-comparison exercises had been carried out between the approved measurement services listed by the RPII.

Mr Fenton replied that all these companies were using an approved radon measurement service based in another EU state that was approved in that state. They therefore meet the requirements to be approved in this country as specified in the legislation. In addition, while not a strict requirement, these laboratories participated in inter-comparison exercises organised by the UK's HPA. During 2006, the RPII also met with these companies to ensure that measurement protocols laid down by the RPII were being adhered to.

4) The question of using sealed *vs* unsealed detectors was raised: would using these two different types of detectors result in an appreciable differences in the radon concentrations detected?
Mr Fenton stated that the RPII use unsealed detectors; however, this should not be a problem provided that the instructions for using the detectors were strictly adhered to.
Dr McLaughlin added that the way detectors are handled in the field is very important; he also added that when the measurement period is finished the detectors should be sent back to the laboratory for processing without delay.

4) Ms Gemma Darcy (State Claims Agency) enquired about radon preventive measures required for new office type workplaces.
Mr Fenton replied that radon preventative measures were required in all new buildings. These are detailed in Technical Guidance Document C (TGD-C) which supplements the Building Regulations. The required measures seem clear for dwellings but TGD-C does not specify requirements for buildings other than dwellings. He emphasised that this was his understanding of the regulations and it was important to confirm this with the Building Standards Section of the DoEHLG who unfortunately were unable to attend the forum.
Mr Paul Clarke (Monaghan County Council) added that in practice most designers tend to scale up what is in TGD-C.

5) A member of the audience asked if there was a requirement for a measurement company who has detected a workplace with radon concentrations above the Reference Level to report this to the RPII?
Mr Fenton replied that the responsibility for informing the RPII of a workplace radon concentration above the Reference Level rests with the employer. The RPII has developed a notification form for this purpose and this is available on the RPII's website.

6) An audience member asked about the requirements for carrying out radon measurements in multi-story buildings?
Mr Fenton replied that measurements are only required at basement and ground floor levels. The RPII has developed guidelines for employers wishing to carryout radon measurements in workplaces and these are available on the RPII'S website.

7) Dr McLaughlin asked whether any cooperation had been received from Trade Unions regarding radon in workplaces?

Mr Fenton replied that in the past this issue had been raised with the Trade Unions but needs to be revisited in 2007. Mr Fenton also added that Trade Unions have priorities and radon in general is not a priority.

8) Mr Monaghan pointed out that other measurement companies were at a disadvantage because the RPII does not have to charge VAT @ 21% which applies to the other measurement companies. He suggested that since there is now a strong private commercial measurement service in Ireland would it not be better for the RPII to cease providing commercial measurements and to regulate those companies that do so?
Dr McGarry replied that the Competition Authority (CA) had investigated the RPII's radon measurement service and had found that the RPII had not abused its position in the market place and that it had complied with all the recommendations made. She added that at some stage in the future the RPII may cease to offer a commercial measurement service but that the time was not right at present. The market in which private measurement companies operate is still uncertain and therefore the RPII would need to be reassured of the long-term sustainability of this industry before it could consider pulling out of the market. In addition, the RPII has built up much expertise in this area over the years and cannot risk losing this expertise. In relation to the regulation of other measurement companies she does not see a role for the RPII here.

9) Dr McLaughlin asked whether it was wise to concentrate our efforts almost exclusively in high radon areas and to ignore largely populated areas such as Dublin which are not classified as high radon areas but could still have a large number of houses with radon concentrations above the reference level?
Dr Colgan agreed with this but added that high radon areas will have higher average radon concentrations than non-high radon areas. Also, most of the homes with the highest radon concentrations are likely to be found in High Radon Areas.

10) Mr Tim O'Neill (Necoflex) stated that it was disappointing that nobody from the Building Standards Section of the DoEHLG was present at the forum. Mr Tom Crotty (Homebond) responded and said that a conference likely to be attended by Building Standards Section personnel was scheduled for the same time as the Radon Forum and that was the likely explanation for their absence.

Appendix 1 List of Attendees

Contact Name	Organisation
David Doyle	Alpha Radon Teo
Terence McKinley	An Post
Martin Lafferty	Clare Co Co
Anthony McNamara	Clare Co Co
Gerry Flynn	Clare Co Co
Christopher Curtin	Clare Co Co
Finbarr Long	Cork City Council
Denise Keogh	Department of Healt and Children
Ina Kelly	Department of Public Health
Theresa Curley	Dept of Education and Science
Johnny MacGettigan	Donegal Co Co
Martin Fitzpatrick	Dublin City Council
Robert Larmour	Environment & Heritage Service, NI
George O'Driscoll	ESB
Michael Timmins	Galway Co Co
Eibhlìn Doyle	Geological Survey of Ireland
Pat O'Connor	Geological Survey of Ireland
John Gillespie	Goodman Medical Ireland Ltd
Tom Crotty	homebond
Anthony Breslin	HSE
Martin Devine	HSE
Mary Heery	HSE
Colm O'Sullivan	HSE
Ray Parle	HSE
Claire Mullin	HSE Sligo
Donal Daly	HSE- South
Fionnuala Donohue	HSE-West
Frank Gleeson	HSE-West
Brendan Mortell	HSE-West
John Pacitto	IBAS Consulting Ltd
Bernard Ward	IBAS Consulting Ltd
Kerry Barret	Kerry Co Co

Chris Van Schoor	Kerry Co Co
Jim Kelly	Kildare Co Co
Thomas Mulligan	Leitrim Co Co
Brian Ross	Longford Co Co
Vincent Collins	Meath Co Co
Paul Clarke	Monaghan Co Co
Tim O'Neill	Necoflex Ltd
Julie-Ann Cushen	North Tipp Co Co
Dave Morrissey	Nuclear Safety Section, DOEHLG
Susan Murphy	Nuclear Safety Section, DOEHLG
C.OLionachain	NUI-Galway
Jim McLaughlin	Physics Department UCD
Anthony McLaughlin	Radon Aware Group
Eugene Monaghan	Radon Centre
Neil Hanaphy	Radon detection Ltd
Noleen McLaughlin	Radon detection Ltd
Leonard Godsil	Radon Ireland Group
Sean Lambe	Radon Solutions Ltd
Jerry Cunningham	Radoncare
John Reilly	Roscommon Co Co
Anita Moran	Roscommon Co Co
Ann Mc Garry	RPII
Tony Colgan	RPII
Hugh Synnott	RPII
David Fenton	RPII
Catherine Organo	RPII
Jarlath Duffy	RPII
Tom Ryan	RPII
Robert Ryan	RPII
David Dawson	RPII
Sharon Wade	RPII
Martin Davy	RTE/RNG
Rosaleen O'Grady	Sligo Borough Council
Michael Fleming	Sligo Co Co

Declan Bree	Sligo Co Co
Gavin Cullen	South Tipp Co Co
Denis Holland	South Tipperary Co Co
Gemma Darcy	State Claims agency
Patrick Murphy	Statistic Department UCD
Mark Finnegan	Student
Jon Miles	UK Health Protection Agency
Ray Daniels	Waterford City Council
Clem Daly	Wexford Co Co
Hajo Zeeb	WHO
Hugh Hunter	Wicklow Co Co
Alan Martin	Wicklow Co Co
Joanne Collins	Wyeth
Michael O' Gabhlain	