EDITORIAL
Radon in Ireland and beyond

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EDITORIAL

Radon in Ireland and beyond

This issue of the *Journal of Radiological Protection* contains two articles on radon from Ireland. One (Organo et al p 107) is on domestic and one (Colgan et al p 121) on occupational exposures. It is, perhaps, the former which will catch the eye, though both are of interest.

A house was identified in Castleisland, County Kerry with an estimated annual average radon concentration of 49 000 Bq m$^{-3}$. This is much the highest level reported for Ireland, or the UK, and approximates to an effective dose of well over one Sv a year, using the ICRP conversion factor. Most strikingly and tragically the householder, who had never smoked, has recently been diagnosed with lung cancer, aged 52. His wife had died from the disease, aged 41, a few years earlier. She had smoked, but had given up twenty years before her death. It is dangerous to draw post hoc conclusions from specific cases, but it is hard to believe that coincidence led to lung cancer in both a husband and wife, at relatively young ages and with limited implication of smoking.

Positive lessons from the incident were that vigorous and resolute remedial efforts resulted in a dramatic reduction in radon concentrations in the house in question, and that this was achieved within three months. Speedy efforts were also made to try to identify any nearby houses which might also have high radon levels.

It is notorious that radon normally has few of the characteristics which might prompt the media to emphasize its dangers:

- radon is natural rather than artificial;
- exposures are not imposed by human agencies and nobody profits from them;
- as with any late effects of radiation, the victims are generally anonymous and isolated individuals.

It is also true, if rather odd, that radon seems to have avoided the aura of dread which often surrounds other radioactive hazards, even when doses are tiny compared with those from radon. It is to be hoped that a beneficial result of the sad circumstances in Castleisland would be a permanent shift in interest towards radon, the largest, and largely avoidable, source of radiation exposure to the population. High radon levels in dwellings or workplaces are best avoided by the installation of effective preventative measures while the building is being constructed. But, as in Castleisland, high radon levels can arise in existing buildings and remedial measures must then be considered.

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.

However, advice from ICRP in Publications 60 and 65 and the European Basic Safety Standards Directive of 1996 have helped to unify and drive up standards of protection against occupational exposures to radon across Europe and beyond. Colgan and his colleagues probably shared a fairly common experience in finding that it was much easier to get recognition of radon as a potential problem in underground workplaces than in shops and offices. They
also report good success in measuring radon levels in schools and, where necessary, reducing them. However, it is clear that much work remains before even a reasonable proportion of Irish workplaces with high radon levels have been identified.

How does the situation in Ireland compare with that in the UK? Radon measurements have been made in about 14,000 UK workplaces. Some of these resulted from HSE programmes to assess employers’ awareness in selected high radon areas, and some from Local Authority initiatives. But most were in response to spontaneous enquiries from employers. New impetus has been given by the Ionising Radiations Regulations of 1999 and HSE has recently updated its internal guidance on radon in workplaces. However, it is clear that, as in Ireland, considerable work remains before there can be confidence that satisfactory standards have been achieved across UK workplaces in general.

So far as domestic radon exposures in the UK are concerned, a formidable number of houses (over 450,000) have been measured, largely as part of government programmes in England, Scotland, Wales and Northern Ireland. Hitherto, the highest domestic concentration reported was about 10,000 Bq m$^{-3}$. However, the DEFRA Radon Rollout Programme is presently operating in a number of areas, including one of the parts of SW England where radon levels are highest. Very recently two houses with radon concentrations of roughly 12,000 and 17,000 Bq m$^{-3}$ have been identified. Fortunately there have been no reports of consequential illness. But it emphasizes the importance of radon as a public health hazard.

Finally, we must remember the imminent publication of the pooling of European case/control studies of radon and lung cancer. This will provide important new and direct information on the risks of exposure of the population to radon.

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This editorial reflects the views of the author and not necessarily those of NRPB.