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## **RADON REMEDIATION IN IRISH SCHOOLS**

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Major scientific thematic areas: TA6 - Radiation Protection of the Public and the Environment

Commencing in 1998, the Radiological Protection Institute of Ireland carried out radon measurements in 3826 schools in the Republic of Ireland on behalf of the Irish Department of Education and Science (DES). This represents approximately 97% of all schools in the country. Approximately 25% (984) schools had radon concentrations above the Irish national schools Reference Level for radon of 200 Bq/m<sup>3</sup> and required remedial work. The number of individual rooms with radon concentrations above 200 Bq/m<sup>3</sup> was 3020.

Remedial work in schools commenced in early 2000. In general schools with maximum radon concentrations in the range 200-400 Bq/m<sup>3</sup> in one or more rooms were remediated through the installation of “passive” systems such as an increase in permanent background ventilation mainly wall vents and trickle vents in windows. Schools with maximum radon concentrations greater than 400 Bq/m<sup>3</sup> were usually remediated through the provision of “active” systems mainly fan assisted sub-slab depressurisation or where this was not possible fan assisted under floor ventilation. The cost of the remedial programme was funded by central Government. “Active” systems were installed by specialised remedial contractors working to the specifications of a radon remedial expert appointed by the DES to design remedial systems for affected schools. Schools requiring increased ventilation were granted aided €190 per affected room and had to organise the work themselves.

In most schools radon remediation was successful in reducing existing radon concentrations to below the Reference Level. Average radon concentration reduction factors for sub-slab depressurisation systems and fan assisted fan assisted under floor ventilation ranged from 5 to 40 with greater reduction rates found at higher original radon concentrations. Increasing ventilation in locations with moderately elevated radon concentrations (200-400 Bq/m<sup>3</sup>) while not as effective as active systems produced on average an approximate 50% reduction in radon concentrations.

Active systems require the use of electric fans for their continued successful long-term operation. The performance of a number of fan assisted sub-slab depressurisation systems and fan assisted under floor ventilation systems were evaluated after a minimum of three years operation. It was found that all systems were still operating satisfactorily. It is recommended however that periodic retesting of rooms where active systems are installed should be carried out to ensure the continued successful long-term operation of these systems.