Introduction
Radon gas in the home is a major source of public radiation exposure and an established cause of lung cancer. The Health Protection Agency has an ongoing radon programme to ‘find and fix’ houses with radon concentrations at or above the Action Level (AL) of 200 Bq m\(^{-3}\). The main aim of remedial work is to reduce radon levels to as low as reasonably achievable and to below the Target Level (TL) of 100 Bq m\(^{-3}\). Householders with high radon levels receive free remedial advice.

Information is being routinely collected from householders who remedy and do a radon test after remediation. This information is stored in the UK national radon database. Analysis of the collected information has been done on around 2400 dwellings. The aims were to identify both the effectiveness of remediation measures and the factors that affect their performance including: the physical characteristics of the home, the radon level before remediation and who carried out the work.

An active sump is clearly the most effective remedy indicating a reduction factor of around 6. Other techniques typically achieved reduction factors of around 2, sealing floors and passive ventilation of living space are least effective. Active measures generally perform better than passive measures.

Each remediation method showed a trend in performance with respect to the initial radon concentration. The higher the initial concentration the better the reduction in exposure for most measures. Higher concentrations are less likely to reduce below the action level. Even if the success rate of achieving a reduction below the AL is low, the reduction factor could be high and thus the remedy still achieves a significant reduction in exposure. The effect was more pronounced for active sumps than for other methods.

The table indicates the degree of influence of each housing characteristic on the performance of each remedial measure. Remediation performance is not significantly affected by the type of home or the heating method although double glazing generally improves remediation performance. Sump systems are not as effective in a house with a basement. The more recent the build date, the more effective active sumps tend to be. The performance of other measures are largely unaffected by the age of the home. In single storey homes, sumps and positive ventilation are more effective.

Performance of remediation may depend on several factors, the initial radon level, house characteristics, choices made by the customer and who does the work. The best reductions are achieved by experienced contractors, then general contractors, followed by DIY. It is not clear cut, further work is necessary to determine if better reduction factors are due to higher initial radon levels or the quality of work, or a mixture of both.

Improved guidance for householders, contractors and others will be prepared using information from this work. Guidance will be published as fact sheets and on HPRs dedicated radon website (www.ukradon.org) so that better informed decisions can be made.