



For a safe basement, ADD Waterproofing:

ProTen Services launch system to protect basements from radon and moisture

Property preservation and environmental services experts, ProTen Services have brought together two of their specialisms to provide property owners with a combined solution to two problems associated with basements; moisture ingress and radon gas.

With the increasing pressure on land, more and more people are going below-ground to create useable living or working space. Martin Freeman, Managing Director of ProTen Services explains, "There are two major issues with below-ground accommodation that must be overcome; firstly, a dry environment must be achieved and secondly, the accommodation must be protected from radon gas."

Radon is a naturally occurring radioactive gas that can build up inside properties. Exposure to high concentrations of the gas is a major threat to an occupant's health, causing over 2000 deaths from lung cancer in the UK each year. The Health Protection Agency advises that basements are particularly susceptible to containing high concentrations of the gas, as there is a larger surface area in contact with the earth through which the gas can permeate.

The nature of radon dictates that control measures should be designed upon the basis that its intrusion into basements is foreseeable. It is recognised, however, that standard waterproofing techniques are in direct conflict with standard radon control methods.


Mr Freeman explains, "Radon in basements is notoriously difficult to manage. Cavity drain membrane (CDM) systems are the specialists' preferred way of achieving waterproofing to the required standard, however in common with other waterproofing methods, CDM systems cannot be used on their own to provide effective, durable radon control. Indeed, such an approach may actually make the problem worse."

To prevent radon entry, a completely sealed system must be used, although this will normally lead to unacceptably high levels of condensation forming in a basement. A CDM system used for waterproofing usually allows for this by leaving gaps for the condensation to drain away, however these gaps will also allow radon in, so need to be sealed if the basement is to be protected against the gas.

Using their many years of experience in waterproofing, radon remediation and air management, ProTen Services have developed a patented system, called Aquis Double Defence, to overcome these contradictions. CDM systems have a part to play in the package, but are not used in isolation, and only certain membrane systems are appropriate.

 **Aquis Double Defence (ADD) is the unique and patented system for enabling dry, safe basements.**

Special Projects Manager, Glenn Finch described how the system has benefited one family in Oxfordshire; "The owners tested their double-vaulted basement, and found that it contained radon concentrations of over 2000 bq/m³, more than ten times the Government's Action Level. They had received advice from an academic specialising in the field that the only way to protect the house from radon was to carry out works in the basement that would have cost £80,000 and rendered the space too small to use. Instead they opted for our system, which left them with a dry basement that was safe to use with radon levels of just 69 bq/m³. This system cost less than a quarter of their previous quote, and they now use the extra space as a workshop and playroom."

For further information on the  Aquis Double Defence system or to arrange a technical seminar on the subject, please contact ProTen Services on freephone 0808 100 1928 or email enquiry@protenservices.co.uk.

Notes:

Statistics on the estimated annual number of deaths from lung cancer linked to radon exposure can be found in Professor Darby *et al*'s 2004 paper "Radon in homes and risk of lung cancer: collaborative analysis of individual data from 13 European case-control studies"

Issue 53 (Winter 2007) of the Health Protection Agency's Environmental Radiation Newsletter features an article by Tracy Gooding of the Health Protection Agency that states: *"From data collected in workplaces it is clear that basements have a higher radon potential than ground floors, and that high radon concentrations can be found in basements anywhere in the country, regardless of Affected Area status."*

BS 8102 "Code of practice for protection of structures against water from the ground" is the recognised standard to which below-ground waterproofing should conform.

The isolated use of a CDM system in a basement has the potential to displace radon gas from the below-ground area into the above accommodation. This can create unacceptably high concentrations in the above-ground accommodation, where previously levels of the gas were low.

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