World Radon Solutions Database
Mitigation of existing buildings
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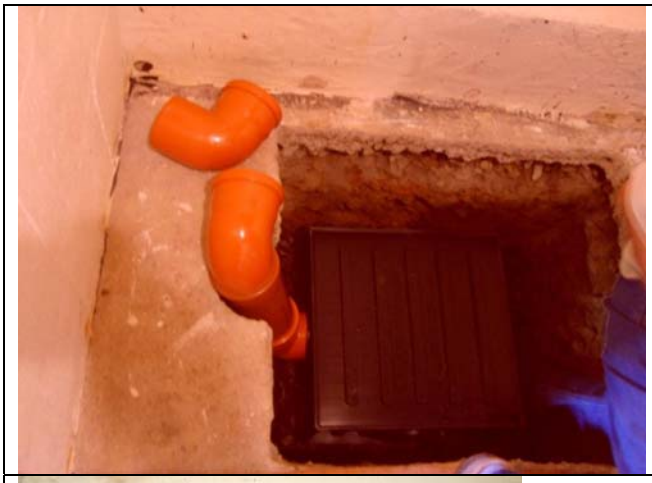
Case Study	Sheet N°	

Type	Sub-slab ventilation

Country	Belgium

Illustration

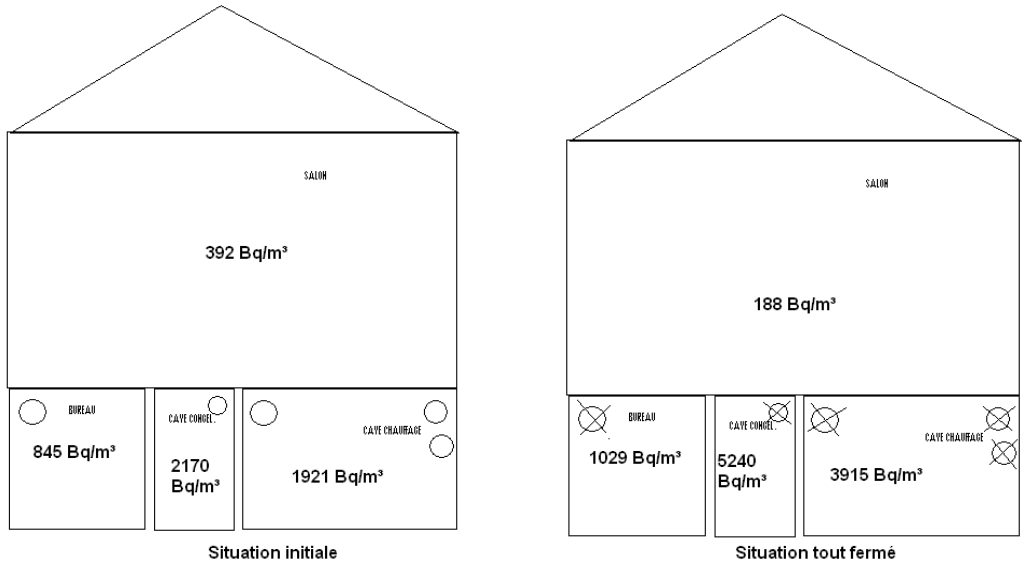




Description

In this house, part of the basement is used as an office. Long term measurements here indicated >2000 Bq/m³ in this room, and more than 600 Bq/m³ in the living room above. The owner installed some small extractors himself in the basement (indicated with a circle on the following sketch). The short-term radon concentration measured subsequently showed no satisfying results (a) on following sketch). Short-term measurements with all the extraction points closed showed a decrease of radon concentration in the living room, but strong increase in the basement (b) on following sketch).

The complexity of the situation made the owner decide to install a sub-slab extraction system in the small basement (see photographs). A hole was drilled in de slab, a sump installed connected to an extraction pipe and covered by rock pebbles, plastic film and concrete. The extractor itself was placed in the crawl space under the patio.



a) **b)**

Selection

The complex situation of the air transport within the house, as evidenced by short-term measurements, and the use of the basement as an office, made the owner decide to install the sub-floor ventilation system.

Pre-installation Diagnosis

A whole series of pre-diagnostic checks were made with short-term measurements, allowing to assess the complexity of the air transport in the house.

Radon reduction achieved (in Bq/m³)

Place	*Concentration before*	*Concentration after*	*Remark*	
Small basement	2170	100	Sub slab ventilation plus room ventilation (534 Bq/m³ without room ventilation)	
Heating basement	1921	80	379 Bq/m³ without room ventilation in the small basement	
Basement office	845	40	222 Bq/m³ without room ventilation in small office	
Living room	392	85	152 Bq/m³ without room ventilation in small office	

Problems

After the initial installation of the sub-slab ventilation system, the concentration in the living room and in the basement office decreased to 152 and 222 Bq/m³, respectively. After the installation of a small extractor in the small basement, allowing room ventilation (see last photograph), the final and optimal results were attained.

System enhancements

There seems still to be an important transport from basement to living room. Increasing the air-tightness of the pathways could allow the system to function at less power.

Further Information

For further information, contact the Belgian Federal Agency for Nuclear Control at radon@fanc.fgov.be , or visit the web site www.fanc.fgov.be and click on *radon*.

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