

**PROPOSED CHANGE**

**MODIFICATION PROPOSÉE**

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**Comment**

**Commentaires**

Document	NBC 2005 CNB	Document
Provision	A-9.13.4.6.	Exigence
Committee	ES-HSB Joint Task Group on Protection Against Radon Ingress	Comité
Minutes	1 <sup>st</sup> meeting of JTG, 3 <sup>rd</sup> meeting of JTG Radon	Procès-verbaux

**EXISTING PROVISION**

**A-9.13.4.6. Soil Gas Control by Depressurization**

As noted in Appendix Note A-9.13.4., one method of excluding soil gas from below-grade living space is to ensure that the pressure difference across the soil/space interface is positive (i.e., towards the outside) so that inward soil gas flow through any leaks will be prevented. This requires consideration of the air pressure on the inside of the envelope and the pressure within the soil. Each is affected by quite different factors.

There is a safe range for the interior pressure in a house. The upper limit is primarily due to the need to minimize outward leakage of the warm, moist interior air through leaks in the building envelope. The lower limit depends on the type of combustion heating equipment present in the house, as discussed in Appendix Note A-9.33.1.1.(2). It also follows from the need to avoid drawing in soil gas, as discussed in Appendix Note A-9.13.4.

Controlling the entry of soil gas by house or basement pressurization is therefore problematic, since it could lead to exfiltration-caused condensation problems in the building envelope. This leaves the option of reducing the pressure outside the envelope as the most practical method of achieving the desired outward pressure difference.

Subfloor depressurization systems have been found to be very effective for controlling soil gas entry into houses. At least in areas which are prone to higher than normal radon levels, or other ground pollutants, this practice is recommended.

Article 9.13.4.6. provides for depressurization as an alternative to the installation of polyethylene below floor slabs. Using this option, a vent pipe for use with a subfloor depressurization system is installed through the floor but is only connected if soil gas levels are found to be excessive.

Radon testing must be performed on the house and copies of the results provided to the home owner and the authority having jurisdiction. Since the radon level in a house can vary significantly during the year, the test should be of sufficient duration to provide a reasonable indication of the concentration. The minimum period for testing should be three months or as recommended by the authority having jurisdiction. The preferred testing location is centrally in the basement or the main floor for houses without basements.

The current Canadian Action Level for radon, as specified by Health Canada, is 800 Bq/m<sup>3</sup> (see H46-2/90-156E, "Exposure Guidelines for Residential Indoor Air Quality"). If the results of the test indicate a concentration exceeding the Canadian Action Level, the rest of the sub-slab depressurization system must be installed. (It may be noted that Canadian and U.S. action levels are likely to differ.)

Installation of the sub-slab depressurization system requires that the pipe cast through the slab to the sub-slab space be uncapped and connected to a ventilation system exhausting to the outside. Exhaust pipes passing through unheated spaces should be insulated. The exhaust fan should be located outside the occupied space where noise will not be a nuisance. It is also best to locate the fan as close to the final outlet end of the ventilation system as possible so that the pressurized portion of the system downstream of the fan will not be located in or adjacent to the living space. If the pressurized portion of the system were to pass through the living space, then any leak in the system would have the potential to spill high concentration soil gas into the living space, thus exacerbating the situation the system was intended to correct. The fan should be of a type suitable for the application and capable of continuous operation.

Since radon concentration of the vent gases can become quite high, soil gases collected by the sub-slab depressurization system should be vented at the roof level. Therefore, it may be desirable to take some simple steps to facilitate future installation of the system. This could include locating the slab vent pipe below a

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suitable interior partition, through which the vertical riser could be run, and pre-drilling the partition top and bottom plates, particularly those not accessible from a basement or attic.

The house should be re-tested for radon after completion of the depressurization system.

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**Delete** Appendix Note A-9.13.4.6.

**Other Code Provisions Affected: None**

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### RATIONALE

#### Problem

#### General

See the Summary of Significant Proposed Changes to NBC Parts 5, 6 and 9.

#### Technical

The current requirements for a test according to the EPA test protocol are not enforceable at the time of construction.

Separate proposed changes to Article 9.13.4.6. necessitate significant revisions and restructuring of the information provided in this Appendix Note.

#### Justification – Explanation

#### General

See the Summary of Significant Proposed Changes to NBC Parts 5, 6 and 9.

#### Technical

The Appendix Note is being replaced by various related new appendix notes.

#### Cost implications

None (see related proposed changes).

#### Enforcement implications

None.

#### Who is affected

Designers, specification writers, and inspectors.

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### OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISION

**Provision: A-9.13.4.6.**

**Analysis: N/A**

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