

PROPOSED CHANGE

MODIFICATION PROPOSÉE

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Document	NBC 2005 CNB	Document
Provision	A-9.13.4.; A-9.13.4.1.(4)	Exigence
Committee	ES-HSB Joint Task Group on Protection Against Radon Ingress	Comité
Minutes	JTG Radon 3 rd meeting	Procès-verbaux

EXISTING PROVISION

A-9.13.4. Exclusion of Soil Gas. Outdoor air entering a dwelling through above-grade leaks in the building envelope normally improves the indoor air quality in the dwelling by reducing the concentrations of pollutants and water vapour. It is only undesirable because it cannot be controlled. On the other hand, air entering a dwelling through below-grade leaks in the envelope may increase the water vapour content of the indoor air and may also bring in a number of pollutants which it picks up from the soil. This mixture of air, water vapour and pollutants is sometimes referred to as “soil gas.” One pollutant often found in soil gas is radon.

Radon is a colourless, odourless, radioactive gas that occurs naturally as a result of the decay of radium. It is found to varying degrees as a component of soil gas in all regions of Canada and is known to enter dwelling units by infiltration into basements and crawl spaces. The presence of radon in sufficient quantity can lead to increased risk of lung cancer.

The potential for high levels of radon infiltration is very difficult to evaluate prior to construction and thus a radon problem may only become apparent once the building is completed and occupied. Therefore various sections of Part 9 require the application of certain radon exclusion measures in all dwellings. These measures are

- low in cost,
- difficult to retrofit, and
- desirable for other benefits they provide.

There are two principal methods of excluding soil gas:

- Sealing the interface between the soil and the occupied space, so far as is reasonably practicable. Sections 9.13. and 9.18. include requirements for soil gas barriers in crawl spaces. Providing control joints to reduce cracking of foundation walls and airtight covers for sump pits are other measures which can help achieve this objective. The requirements provided in Articles 9.13.4.3., 9.13.4.5., and 9.13.4.7. are described in Appendix Notes A-9.13.4.3., 9.13.4.5. and 9.13.4.7., and A-9.13.4.5.(1) and (2).
- Ensuring that the pressure difference across the soil/space interface is positive (i.e., towards the outside) so that inward soil gas flow through any remaining leaks will be prevented. The requirements provided in Article 9.13.4.6. are described in Appendix Note A-9.13.4.6.

A-9.13.4.1.(4) Subfloor Depressurization in Houses with Preserved Wood

Foundations. Standard CAN/CSA-S406, “Construction of Preserved Wood Foundations,” requires that a polyethylene sheet ground cover be installed under all floors-on-ground in buildings with preserved wood foundations. The use of a subfloor depressurization system may be acceptable with such constructions, seeing as the standard doesn’t mention otherwise, but the polyethylene sheet ground cover is an unconditional requirement of that standard. The polyethylene sheet cannot be forfeited in houses intended to conform to the standard and the depressurization system would have to be installed under the ground cover membrane.

PROPOSED CHANGE

Replace Appendix Note A-9.13.4. as follows and **Delete** Appendix Note A-9.13.4.1.(4):

Other Code Provisions Affected: None

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A-9.13.4. Exclusion of Soil Gas Control. Outdoor air entering a dwelling through above-grade leaks in the building envelope normally improves the indoor air quality in the dwelling by reducing the concentrations of pollutants and water vapour. It is only undesirable because it cannot be controlled. On the other hand, air entering a dwelling through below-grade leaks in the envelope may increase the water vapour content of the indoor air and may also bring in a number of pollutants, ~~which it picks~~ picked up from the soil. This mixture of air, water vapour and pollutants is sometimes referred to as “soil gas.” One pollutant often found in soil gas is radon.

[Sentence 9.13.4.2.\(1\)-2010, which requires the installation of an air barrier system, addresses the protection from all soil gases, while the remainder of Article 9.13.4.2.-2010 along with Article 9.13.4.3.-2010, which require the provision of the means to depressurize the space between the air barrier and the ground, specifically address the capability to mitigate high radon concentrations in the future, should this become necessary.](#)

Radon is a colourless, odourless, radioactive gas that occurs naturally as a result of the decay of radium. It is found to varying degrees as a component of soil gas in all regions of Canada and is known to enter dwelling units by infiltration into basements and crawl spaces. The presence of radon in sufficient quantity can lead to [an](#) increased risk of lung cancer.

The potential for high levels of radon infiltration is very difficult to evaluate prior to construction and thus a radon problem may only become apparent once the building is completed and occupied. Therefore various sections of Part 9 require the application of certain radon exclusion measures in all dwellings. These measures are

- low in cost,
- difficult to retrofit, and
- desirable for other benefits they provide.

~~There are two~~ principal methods of ~~excluding~~ [resisting the ingress of all](#) soil gases, ~~a resistance which is required for all buildings (see Sentence 9.13.4.2.(1)-2010), is to~~ • ~~sealing~~ the interface between the soil and the occupied space, so far as is reasonably practicable. Sections ~~9.13., and 9.18. and 9.25. include~~ [contain](#) requirements for [air and](#) soil gas barriers [in assemblies in contact with ground, including those in](#) crawl spaces. Providing control joints to reduce cracking of foundation walls and airtight covers for sump pits ([see Section 9.14.](#)) are other measures ~~which that~~ can help achieve this objective. The requirements provided in [Articles Subsection 9.25.3.-2010](#) ~~13.4.3., 9.13.4.5., and 9.13.4.7.~~ are [explained](#) ~~described~~ in Appendix Notes [A-9.25.3.4. and 9.25.3.6.-2010](#) ~~A-9.13.4.3., 9.13.4.5. and 9.13.4.7., and A-9.25.3.6.(2) and (3)-2010~~ [A-9.13.4.5.\(1\) and \(2\).](#)

[The principal method of excluding radon](#) ~~soil gas is to ensure~~ [ing](#) that the pressure difference across the ~~ground~~ [soil](#)/space interface is positive (i.e., towards the outside) so that [the](#) inward ~~soil gas~~ flow [of radon](#) through any remaining leaks will be [minimized](#) ~~prevented~~. The requirements provided in Article ~~9.13.4.6.~~ [9.13.4.3.-2010](#) are ~~described~~ [explained](#) in Appendix Note ~~A-9.13.4.6.~~ [A-9.13.4.3.-2010.](#)

RATIONALE

Problem

General

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

Technical

The current Appendix Note does not speak to the fact that some requirements in the Code address radon specifically, while others address soil gas in general.

The clarification regarding the wood preservation standard is superfluous because it is proposed that a soil gas barrier be required for all buildings.

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Justification - Explanation

General

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

Technical

A paragraph has been added to clarify that some of the proposed changes address radon specifically, while others address soil gas in general. Other wording has been changed to be consistent with other proposed changes.

The clarification regarding the wood preservation standard has been deleted because it is proposed that a soil gas barrier be required for all buildings.

The Appendix Note has been made consistent with related proposed Code changes.

Cost implications

There are no cost implications for appendix notes as the information provided is meant as guidance only.

Enforcement implications

Appendix notes facilitate enforcement as they provide further information on Code requirements.

Who is affected

Builders, contractors, building officials.

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISION

Provision: A-9.13.4. Analysis: N/A

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISION

Provision: A-9.13.4.1.(4) Analysis: N/A

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