

Testing your home for Radon Instructions



northern health
the northern way of caring

Congratulations! You have picked up your long-term radon test kit and are well on your way to protecting yourself and your family from radon!

Your Radon Test Kit

Record the detector number here: _____

Your radon test kit should include the following:

- Radon detector in a silver bag
- Gold circular seal
- ‘Testing Your Home for Radon’ instructions
- ‘Return’ card
- Reminder magnet
- Radon information pamphlet
- Padded yellow envelope with return address

Radon Testing Instructions

In order to ensure that your test results are as representative as possible, please follow the instructions below:

1. Choose a location where you would like to place your detector.
Your detector should be:
 - Placed in a room located on the lowest level of you home where you spend an average of at **least 4 hours** each day.
 - Basement family rooms or basement bedrooms are generally good locations. If you spend very little time in your basement floor, a main floor bedroom or living room is recommended.
 - Detectors should not be placed in the kitchen, bathrooms or laundry room since high moisture, fans and fumes can give inaccurate results.
 - Do not place them in a closet or other confined space.
 - Located at laying down, sitting or standing breathing height (generally 0.8 m to 2.0 m high, or 2.5’ to 6.5’).
 - At least 0.5 m (20”) from the ceiling and 0.2 m (8”) from other objects (you want air to flow freely around the top and sides of the detector).
 - Located where it will not be disturbed.
 - Away** from heating vents, windows, doors, drafts, fans and fireplaces.

- Away** from television sets, stereos, stereo speakers and other electrically powered equipment.
- Not** in direct sunlight.
- Not** next to an outside wall. Placing the detector along an inside wall is OK.

A good place to set up your radon detector is on living room or bedroom shelves, bedposts, tables (if not used frequently), night stands or dressers. It can also be hung and/or taped from rafters, joists or interior walls.

2. Take the detector out of the silver protective bag. Removing the tester from the bag will start the testing process so please **do not** open the bag until you are ready to position your tester in your home and start the test. Keep the silver bag as you will need to place the detector in this bag for shipping once sampling is complete.
3. Record the start date on the white label located on your detector and on the provided 'Return' card.
4. If you have chosen to place the detector on a flat surface, place the detector upright (white holes facing the ceiling) in the location you have chosen. You can place double sided tape on the back of the detector to make sure that it remains in place. Make sure not to place any objects beside or on top of the detector.
If you would like to hang the detector from a rafter, joist or interior wall, pin the white 'tail' of the detector to the wall/joint/rafter. Ensure that the white holes are always facing the room. Again, you can make sure that the detector remains in place by putting double sided tape on the back of the detector and attaching it to the wall.
5. Store silver packing, gold seal, return card, padded envelope and these instructions in a safe location until you are finished with testing.
6. Write down the date when you would like to return your detector to the lab for analysis on your reminder fridge magnet. This date should be a minimum of 3 months from the start date (preferably 12 months, see #7 below). Place magnet on fridge as a reminder.
7. Leave detector undisturbed for a period of 3 to 12 months. 12 month testing is recommended since it will result in a better 'average' radon concentration. If you are testing for less than 12 months, make sure that at least a portion of the test is conducted during the winter heating months to make sure you are not underestimating your radon exposure (radon is usually highest in the winter).

8. When testing is complete, peel off the gold seal from its paper backing and apply to the top of the detector to cover all the white holes (this will stop testing temporarily).
9. Record the ending date on the white label of the detector.
10. Fill out return card.
11. Place the detector in the silver package and tape close. Then place this package **as well as the return card** into the addressed padded envelope provided. To ensure accurate results, this envelope should be **mailed within 48 hours of the testing end date**.
12. Mail package to:
Northern Health will provide free shipping to the lab. If you would like to take advantage of this free shipping, bring your detector into your local Public Health Protection office (where you purchased your detector) Monday to Thursday before 2:00 p.m. Alternatively, you can mail the package to: Attn: Radon Receiving, Landauer, Inc., 2 Science Road, Glenwood, IL 60425-1586, USA.
13. Your radon concentrations results will be reported to you by the lab within approximately 1 month following shipment. If you have not received your results within a month, please contact Landauer at 1-800-528-8327.

If you have any questions, please feel free to contact your Healthy Community Environments Lead at 250-565-2150 or by e-mailing radon@northernhealth.ca.

Quick Checklist

Before Testing	After Testing
<input type="checkbox"/> Choose location	<input type="checkbox"/> Seal detector
<input type="checkbox"/> Take detector from bag	<input type="checkbox"/> Record end date
<input type="checkbox"/> Record start date	<input type="checkbox"/> Fill out 'Return' card
<input type="checkbox"/> Place detector	<input type="checkbox"/> Place in package (return card and sealed detector)
<input type="checkbox"/> Store material	<input type="checkbox"/> Mail
<input type="checkbox"/> Place fridge magnet	<input type="checkbox"/> Wait for results
<input type="checkbox"/> Leave detector	<input type="checkbox"/> Interpret results

Northern Health recommends that you keep these instructions until after you have received your results to help you interpret your results and decide whether radon mitigation is required.

Interpreting your Results

Making sure that you are using the right units:

Test results are usually reported in becquerels per cubic meter (Bq/m^3). However, occasionally, they can also be reported in pico curries per liter (pCi/L). In Canada, radon is usually referred to in Bq/m^3 while in the US, it is generally reported in pCi/L . In order to compare your results to the Health Canada guideline, it is important that you are using Bq/m^3 . If your results are in pCi/L , it is easy to convert this number to Bq/m^3 . Just simply multiply your results by 37 to get Bq/m^3 . For instance, if your results are 1.3 pCi/L , your results would be 48.1 Bq/m^3 ($1.3 \times 37 = 48.1$).

What do the numbers means?

The Health Canada guideline for indoor radon is 200 Bq/m³. As such, Health Canada recommends that all homes be mitigated (or “fixed”) if radon concentrations in the ‘normal occupancy area’ are found to be above 200 Bq/m³. The higher this number, the sooner mitigation should be conducted. The guideline suggests the following:

- If radon concentrations are greater than 600 Bq/m³, mitigation should be carried out within 1 year;
- If radon concentrations are greater than 200 Bq/m³ but less than 600 Bq/m³, mitigation should be carried out within 2 years.

Radon Mitigation

Any home that has radon concentrations above 200 Bq/m³ should be mitigated to reduce radon levels to ‘as low as practical’. This means that reasonable efforts should be undertaken to maintain radiation exposures as low as possible while still taking social and economic (i.e. costs) factors in mind. In general, you want to reduce the radon concentrations to less than 200 Bq/m³, or to a value as low as practical¹.

Also, keep in mind that the lung cancer risk from radon is much greater if you are a smoker. As such, if your home has high radon concentrations and you smoke, we strongly encourage you to try to stop smoking. If you would like help or to get more information on quitting smoking, please contact the Northern Health Nicotine Intervention Counseling Centre at:

Northern Interior: 250-565-7344
Northwest: 250-622-6371
Northeast: 250-565-7344

¹ Health Canada. 2009. Government of Canada Radon Guideline. Available online at: http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/guidelines_lignes_directrice-eng.php (accessed July 2009).

What are the different mitigation methods?

There are several ways in which radon concentrations can be reduced in buildings. The costs of these generally range from \$500 to \$3,000. They are as follows:

For Significant Reductions:

Soil Depressurization (\$1,500 to \$3,000)

This method has been found to be the most effective and reliable radon reduction technique and it is the one used most often by radon mitigation specialists. This method involves installing a PVC vent pipe through the basement floor slab which reverses the air pressure difference between the house and the ground, reducing the concentrations of radon next to the foundation. The soil in crawl-spaces can be vented using a similar method by installing a sealed membrane above the soil and venting the area beneath the membrane. Concrete block homes may require that suction be applied to the block cores.

Soil depressurization systems can be either active or passive. An active system includes a fan which pulls air from beneath the building and pushes it to the outside. A passive system is one where no fan is used and relies on the concept that radon will move from high radon concentrations (i.e. air under your basement) to low radon concentrations (i.e. outside air).

When using an active system, it is important to make sure that the active movement of air to the outside does not cause back drafting of combustion appliances such as furnaces and wood-stoves. Back drafting is when the inside of the building is depressurized to the point that combustion products, such as smoke, spill into the home instead of venting to the outside. Back draft testing can be carried out by a trained radon reduction or heating contractor.

Active soil depressurization systems can reduce radon concentrations by 80% or more. Generally cost for such systems range between \$1500 and \$3000. In addition, a homeowner should budget regular operation and maintenance costs (i.e. electricity for the fan) and a potential increase in their heating and/or cooling bills. Generally, the installation of such a system is carried out by a mitigation contractor.

For Moderate Reductions:

Increase Mechanical Ventilation (free to \$2,500)

Increasing the mechanical ventilation in a home will increase the air exchange rates within your home and, as a result, lower radon concentrations. While this method can be as simple as opening windows and/or increasing drafts within your home (not very practical during winter months), for energy efficiency, this is usually done by using a Heat Recovery Ventilator (HRV). A HRV will balance the intake and exhaust of air from the home (to minimize forces that draw radon into the home) while at the same time acting as a heat exchange system to minimize heat loss. A HRV system usually costs approximately \$1500 to \$2500 plus the costs associated with operation and maintenance.

For Marginal Reductions:

Closing Entry Routes for Radon (Few hundred to > \$2000)

Sometimes it is enough to seal off obvious radon entry points in your home. These may include sumps, exposed soil (e.g. crawl spaces) and holes and cracks in concrete walls. Once all the obvious radon entry routes are sealed, radon concentrations can sometimes be further reduced by sealing the smaller, less obvious entry routes such as minor cracks in foundation walls (e.g. painting the wall with sealants, etc.), sealing joints, utility penetration gaps, etc.

Reducing Forces that Draw Radon into a Home (free)

Reducing the negative air pressure in a building will generally slow down the speed at which radon migrates into a home. In some cases, this is enough to lower the radon concentrations to acceptable levels. Some methods of reducing the negative air pressure include opening a nearby window when operating an open fire place, shutting the chimney damper when fireplaces are not in use and avoiding continuous use of exhaust fans. The results of this method are generally marginal².

¹ Health Canada. 2009. Government of Canada Radon Guideline. Available online at: http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/guidelines_lignes_directrice-eng.php (accessed July 2009).

Who should carry out radon mitigation?

Depending on which method you use, radon mitigation can be carried out by yourself or by a contractor. Health Canada recommends that you choose a service provider that has been certified with either the National Environmental Health Association (NEHA) or the National Radon Safety Board (NRSB).

Other local environmental consulting companies and/or contractors, while not certified, may also be able to help to mitigate your home.

For more information on radon testing and mitigation in the North, please contact:

Northern Health, Public Health Protection
250-565-2150
radon@northernhealth.ca
www.northernhealth.ca

You can also contact the following agencies for more information:

BC Centre for Disease Control - Radiation Protection Services
604-660-6633 Toll free: 1-800-663-7867
<http://www.bccdc.ca/healthenv/Contaminants/Radon/default.htm>

Health Canada
604-666-2083
radon_bcyt@hc-sc.gc.ca www.healthcanada.gc.ca/radon

BC Lung Association
1-800-665-5864
info@bc.lung.ca
http://www.bc.lung.ca/airquality/airquality_radon.html

The following publications (available online) also provide some very valuable information:

Radon; A Guide for Canadian Homeowners

Canadian Mortgage and Housing Corporation

<https://www03.cmhc-schl.gc.ca/b2c/b2c/init.do?langage=en&shop=Z01EN&areaID=0000000016&productID=00000000160000000036>

Residential Indoor Radon Testing

National Collaborating Centre for Environmental Health

http://www.ncceh.ca/files/Radon_Testing_May_2009.pdf

Effective Interventions to Reduce Indoor Radon Levels

National Collaborating Centre for Environmental Health

http://www.ncceh.ca/files/Radon_Interventions_Dec_2008.pdf

A Citizen's Guide to Radon

US Environmental Protection Agency

<http://www.epa.gov/radon/pubs/citguide.html>

(Please note that the information contained on this website is not Canadian and may differ from some of the information provided by Canadian Authorities.

Notes:



northernhealth.ca

[#healthynorth](https://twitter.com/healthynorth)