



# PRO-SPEX

Residential & Commercial Inspection Services



Pro Spex Home & Commercial Inspection Services

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Clients

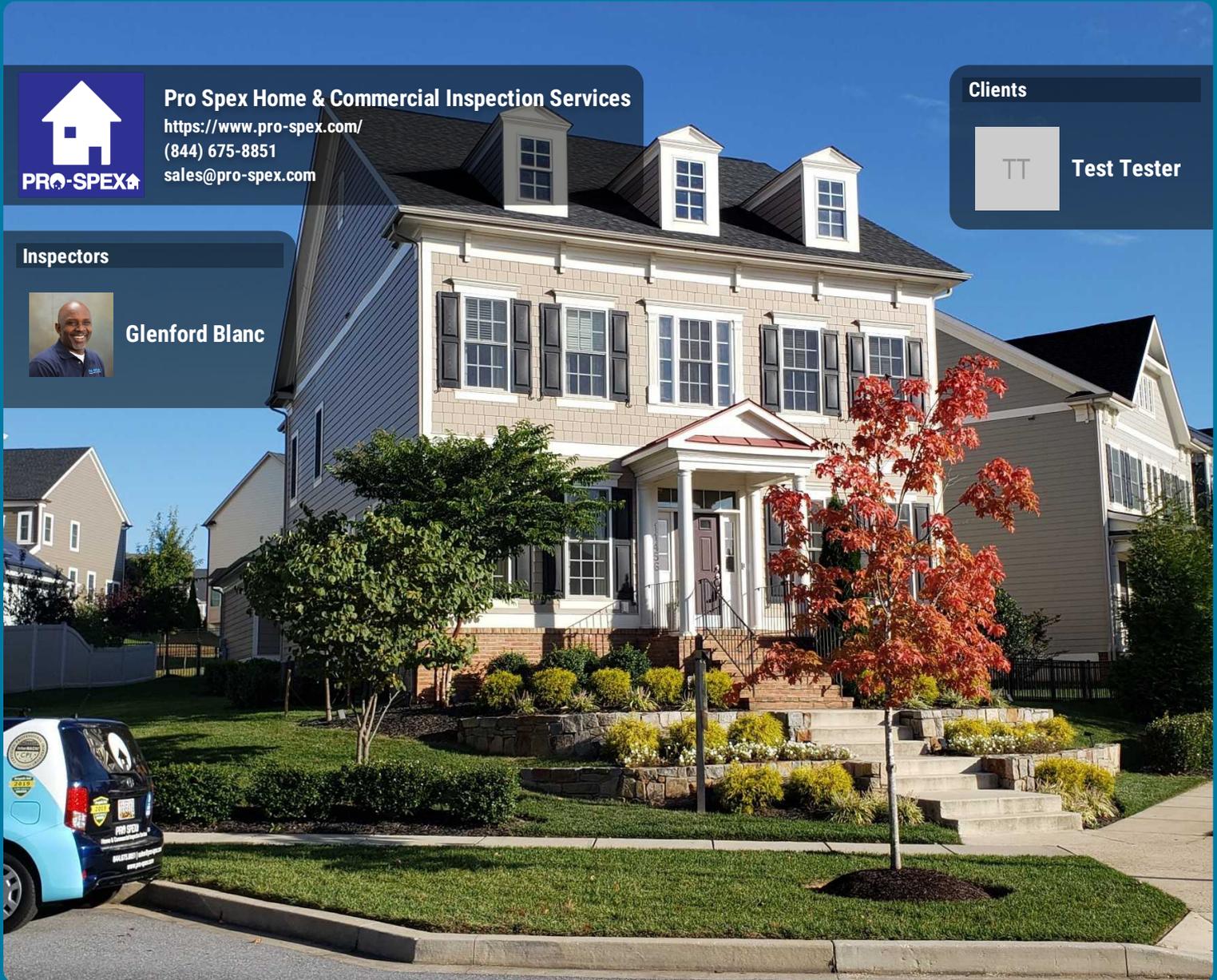


Test Tester

Inspectors



Glenford Blanc



606 Main Street, Laurel, Maryland 20707

Radon Test Results (Radoneye) V1

Prepared for

Test Tester

Nov 21, 2020 at 10:00 AM

DON'T MAKE YOUR SMARTEST INVESTMENT YOUR BIGGEST MISTAKE

# REPORT INTRODUCTION

## PROPERTY & INSPECTION INFORMATION

**Full Address**

606 Main Street, Laurel, Maryland, 20707

**Year Build**

1919

**Square Footage**

1344

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1. SITE CONDITIONS

2. SUMMARY OF TEST RESULTS

3. HOW TO INTERPRET THE RESULTS

5. RADON REMEDIATION IN HOMES

## SITE CONDITIONS IMPORTANT INFORMATION

### Photos of Testing Location

### How Radon Tests are Performed

#### Radon Test Device Placement

The EPA recommends that testing device(s) be placed in the lowest level of the home that could be used regularly, whether it is finished or unfinished. Conduct the test in any space that could be used by the buyer as a bedroom, play area, family room, den, exercise room, or workshop. Based on their client's intended use of the space, the qualified testing professional has identified the appropriate test location and informed all parties. Warning signs have been placed in the property to advise persons entering that a test is in progress.

#### Test Interference

There is a potential for test interference in real estate transactions. The device used will detect test interference:

- Photographs will be taken at time of placement to determine whether the test device has been moved and the device is equipped with a sensor that will detect if it has been tampered with, including loss of power.
- All parties have been informed of the need to maintain close home conditions during the testing period.
- Home buyers and sellers should consult a qualified radon test provider about the use of these precautions.

#### Short-Term Testing

All parties understand, this is a short-term test (Minimum 48 hours) intended to facilitate a Real Estate transaction, conducted according to the standards established by the EPA and the NRSB. Longer term tests may produce different results. These results assume the home was closed prior to the start of the test for at least 12 hours and closed home conditions will remain in effect for the test duration (minimum 48 hours).

## SITE CONDITIONS TESTING INFORMATION

<b>Placement Date:</b>	<b>PLACEMENT TIME</b>	<b>Placed By</b>
1/1/1111		Glen
<b>Pickup Date:</b>	<b>PICKUP TIME</b>	<b>Pickup By</b>
1/5/1111	10.45 am,	Glen
<b>Style Of Building</b>	<b>Occupancy</b>	<b>Weather Conditions at Placement</b>
Colonial	Owner Occupied	Overcast, High Winds, Humid
<b>Weather Conditions at Pickup</b>		
Sunny, High Winds, Hot		

## SUMMARY OF TEST RESULTS IMPORTANT INFORMATION

### The RadonEye Monitor

This radon test was conducted using a RadonEye Pro Continuous Radon Monitor. The RadonEye Pro is both NRSB and NRPP certified professional grade monitor. This is equipped with an ionization chamber sensor that uses FTLab's high precision measurement technology to measure radon alpha decay. The sensitivity of the sensor is 30 cph / pCi / l, and the radon level in the sealed space within 1 hour can be measured within  $\pm 10\%$  precision.

#### SPECIFICATION

- Type : Pulsed Ion Chamber
- Data saving interval : 1h (10min update)
- Sensitivity : 0.5cpm/pCi/L (30cph/pCi/L)
- \* MDC : 0.18pCi/L
- Operating Range : 34~104°F (1~40?), RH < 80% (No condensation)
- Range : 0.2 ~ 255pCi/L (7~9,435Bq/?)
- Reproducibility : <  $\pm 10\%$  at 10pCi/L (after 1 hour)
- Accuracy : <  $\pm 10\%$  at 10pCi/L (min. error <  $\pm 0.5$ pCi/L)
- Power : 12V 1A DC adapter
- Size : ?H4.92 x D3.15(in) / ?H125 x D80(mm)
- Weight : 8.82(oz) / 250g
- Data communication : Wi-Fi (internet), Bluetooth LE(Android/iOS)
- Data storage capacity :
- Inspection mode : Max 240h x 10 (2,400 data points)
- Continuous mode : 300days (7,200 data points)
- Display : 0.96 inch OLED



## SUMMARY OF TEST RESULTS TESTING INFORMATION

Monitor Serial Number	EPA PROTOCOL AVE (pCi/l)	OVERALL AVG (pCi/l)
RP22008240013	1.1,	1.1,

# HOURLY RADON READINGS

Test Started  
**November 25, 2020 11:14**

Test Ended  
**November 27, 2020 11:14**

Inspection Duration  
**48 hours**

Calibrated  
**August 24, 2020**

Wait Time  
**0 hour**

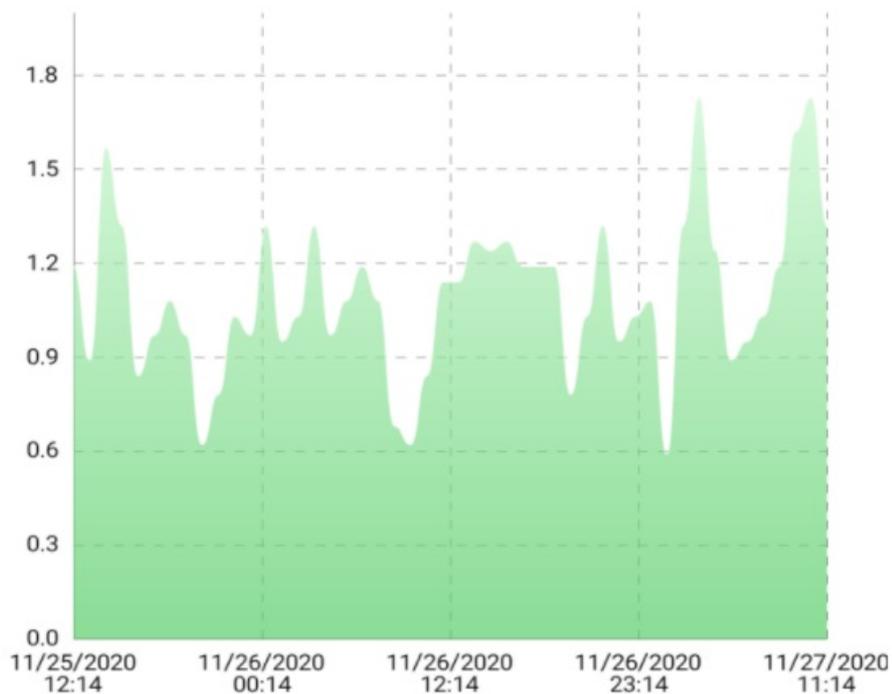
Radon Concentration max  
**1.7**

Radon Concentration min  
**0.6**

Overall Avg  
**1.1**

EPA Protocol Avg  
**1.1**

*NOTE: The calculated EPA average excludes the first 4 hrs measures to follow EPA protocol.*



## Table of Hourly Radon Measurements

**Overall Avg: 1.1 pCi/ℓ**

Timestamp	Radon	Timestamp	Radon
11/25/2020 12:14	1.2	11/26/2020 12:14	1.1
11/25/2020 13:14	0.9	11/26/2020 13:14	1.3
11/25/2020 14:14	1.6	11/26/2020 14:14	1.2
11/25/2020 15:14	1.3	11/26/2020 15:14	1.3
11/25/2020 16:14	0.8	11/26/2020 16:14	1.2
11/25/2020 17:14	1.0	11/26/2020 17:14	1.2
11/25/2020 18:14	1.1	11/26/2020 18:14	1.2
11/25/2020 19:14	1.0	11/26/2020 19:14	0.8
11/25/2020 20:14	0.6	11/26/2020 20:14	1.0
11/25/2020 21:14	0.8	11/26/2020 21:14	1.3
11/25/2020 22:14	1.0	11/26/2020 22:14	0.9
11/25/2020 23:14	1.0	11/26/2020 23:14	1.0
11/26/2020 00:14	1.3	11/27/2020 00:14	1.1
11/26/2020 01:14	0.9	11/27/2020 01:14	0.6
11/26/2020 02:14	1.0	11/27/2020 02:14	1.3
11/26/2020 03:14	1.3	11/27/2020 03:14	1.7
11/26/2020 04:14	1.0	11/27/2020 04:14	1.2
11/26/2020 05:14	1.1	11/27/2020 05:14	0.9
11/26/2020 06:14	1.2	11/27/2020 06:14	0.9
11/26/2020 07:14	1.1	11/27/2020 07:14	1.0
11/26/2020 08:14	0.7	11/27/2020 08:14	1.2
11/26/2020 09:14	0.6	11/27/2020 09:14	1.6
11/26/2020 10:14	0.8	11/27/2020 10:14	1.7
11/26/2020 11:14	1.1	11/27/2020 11:14	1.3

## HOW TO INTERPRET THE RESULTS IMPORTANT INFORMATION

### What The Results Mean

#### Results Significantly Below 4.0 (2.7 or lower) pCi/L

No action needed, retest in 12 months

#### Results Close to 4.0 (Above 2.7) pCi/L

The WHO Handbook on Indoor Radon: A Public Health Perspective indicates that radon exposure is a major and growing public health threat in homes and recommends that countries adopt reference levels of the gas of 100 Bq/m<sup>3</sup> which is equivalent to 2.7 pCi/L. The WHO Handbook on Indoor Radon: A Public Health Perspective indicates that radon exposure is a major and growing public health threat in homes and recommends that countries adopt reference levels of the gas of 100 Bq/m<sup>3</sup> which is equivalent to 2.7 pCi/L. Recommend longer term test to obtain a more accurate reading.

#### Results Above 4.0 pCi/L

The US EPA has set an action level of 4.0 pCi/L. At or above this level of radon, the EPA recommends you take [corrective measures](#) to reduce your exposure to radon gas. This does not imply that a level below 4.0 pCi/L is considered acceptable, as stated in [the BEIR VI study](#)

### What is a safe and acceptable level of radon gas?

The following information is summarized from the World Health Organization (WHO) and the Environmental Protection Agency (EPA).

#### What is a safe and acceptable level of radon gas?

This is actually two separate questions. The first is: "What is a safe level of radon gas?" The second is: "What is an acceptable level of radon gas?"

#### What is a safe level of radon gas?

A safe level of radon gas is no radon gas. Radon gas is a carcinogen which causes [lung cancer](#). The US EPA has put it plainly, stating, "Any radon exposure has some risk of causing lung cancer. The lower the radon level in your home, the lower your family's risk of lung cancer." The average person receives a higher dose of radiation from the radon levels in their home than from their combined exposure to all other radiation sources, natural or man-made. Radon gas is a naturally-occurring byproduct of the radioactive decay of Uranium in the soil.

Depending on your [geographic location](#), the radon levels of the air you breathe outside of your home may be as high as 0.75 pCi/L. The national average of outside radon levels is 0.4 pCi/L and it is estimated by the National Academy of Sciences that outdoor radon levels cause approximately 800 of the 21,000 radon induced lung cancer deaths in the US each year. Your risk of lung cancer increases substantially with exposure to higher radon levels. Lung cancer risk rises 16% per 2.7 pCi/L increase in radon exposure. [World Health Organization, 2009 studies](#) show that radon is the primary cause of lung cancer among people who have never smoked. However, the absolute numbers of radon-induced lung cancers are much larger in people who smoke, or who have smoked in the past, due to a strong combined effect of smoking and radon.

#### What is an acceptable level of radon gas?

**Radon Act 51** passed by Congress set the natural outdoor level of radon gas (0.4 pCi/L) as the target radon level for indoor radon levels. Unfortunately two-thirds of all homes exceed this level. The US EPA was tasked with setting practical guidelines and recommendations for the nation. To this end, the US EPA has set an action level of 4 pCi/L. At or above this level of radon, the EPA recommends you take [corrective measures](#) to reduce your exposure to radon gas. This does not imply that a level below 4.0 pCi/L is considered acceptable, as stated in [the BEIR VI study](#). It is estimated that a reduction of radon levels to below 2 pCi/L nationwide would likely reduce the yearly lung cancer deaths attributed to radon by 50%. However, even with an action level of 2.0 pCi/L, the cancer risk presented by radon gas is still hundreds of times greater than the risks allowed for carcinogens in our food and water.

## The World Health Organization

The WHO Handbook on Indoor Radon: A Public Health Perspective indicates that radon exposure is a major and growing public health threat in homes and recommends that countries adopt reference levels of the gas of 100 Bq/m<sup>3</sup> which is equivalent to 2.7 pCi/L.

You can download a PDF version of the [WHO handbook on indoor radon](#) here. "Radon is the second most important cause of lung cancer after smoking in many countries," notes Dr Maria Neira, Director of WHO's Public Health and Environment Department. "Most of radon-induced lung cancers occur from low and medium dose exposures in people's homes. Strengthened action by policy makers, and by construction and building professionals can substantially lower the health impact by preventing and reducing radon exposure."

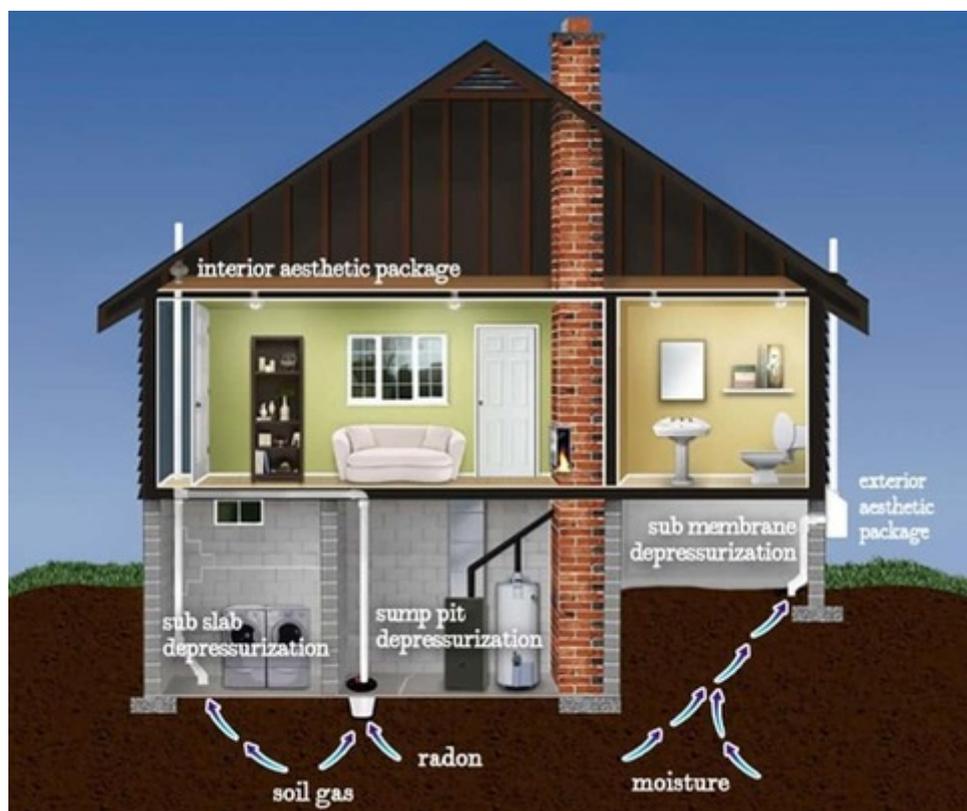
## Conclusion

While no level of radon gas is completely safe, as with most things in life we must balance the benefits and costs to find our own "acceptable" levels. We walk outside and work in the sun, exposing ourselves to ultraviolet radiation and increasing our risk of developing skin cancer. We drive in automobiles almost every day even though greater than 1 in 86 deaths is a result of automobile accidents. People smoke, eat poorly, and engage in dangerous behaviors on a daily basis. To some degree, radon gas is another daily risk that we all must take. However, you choose what you eat, whether or not you smoke, and how and when you drive. You have no choice but to breathe the air in your home. A simple and [inexpensive radon test](#) can give you the information you need to make an informed decision about what level of radon gas exposure is acceptable to you.

## RADON REMEDIATION IN HOMES IMPORTANT INFORMATION

### Radon Remediation

**Radon mitigation systems** use a fan to continuously pull air from the soil and exhaust it outdoors through a pipe. The pipe can either run inside or outside the home and discharges outside, away from the windows and openings.



Radon mitigation is any process or system used to reduce radon concentrations in buildings. The goal of the radon mitigation system is to reduce the indoor radon level as low as reasonably achievable. All systems should reduce radon below the EPA action level of 4 pCi/L (picocuries of radon per liter of air). A quality radon mitigation system may reduce year-round levels to below 2 pCi/L.

A home's foundation type helps determine the radon mitigation system that will work best. A radon professional should determine the type of mitigation system to install and may conduct some diagnostic testing. Radon mitigation systems use a fan to continuously pull air from the soil and exhaust it outdoors through a pipe. The pipe can either run inside or outside the home and discharges outside, away from the windows and openings. In addition, cracks and openings in the foundation are sealed. Sealing limits the flow of radon and makes the radon mitigation system more efficient.

The PBS series "[Ask this Old House](#)" visited a home in Minneapolis to install a radon mitigation system. The episode covers how radon systems are properly designed and installed. This video gives the viewer a good sense of what to expect from a radon mitigation professional and radon mitigation system.

### Three of the most common types of radon mitigation systems

1. **Sub-slab suction** - Pulls radon directly beneath the home's foundation and vents it outside.
2. **Drain tile suction** - Pipe penetrates into the drain tile and vents the soil gases outside. Covers are placed on the sump baskets.
3. **Sub-membrane** - Used in crawl spaces, a plastic sheet covers exposed dirt on the floor, extends up onto the wall and is sealed. A radon pipe penetrates the plastic sheeting, pulls the soil gas from the crawl space, and vents it outside.

### Radon mitigation system components

**Radon fan** is located in an unconditioned space, like an attic or outside, to prevent radon leaking back into the home. The fan is plugged into an electrical junction box or hard wired.

**Radon system tag** is placed on the system by a licensed radon professional once the system is complete.

**U-tube manometer** is a monitoring device that is installed with every system. The u-tube visually indicates the fan is working.

**Radon pipe** vent discharge should be, at least 10 feet above ground and 10 feet away from windows, openings, doors, openings to adjacent buildings, and above the edge of the roof.

## Cost of a radon mitigation system

The cost can depend on many factors including the type of radon system to be installed and how your home was built. In general, costs can range from \$1,500 to \$2,500. Financial assistance may be available to help pay for a radon mitigation system and depends on household income, geographic location, and funding availability.

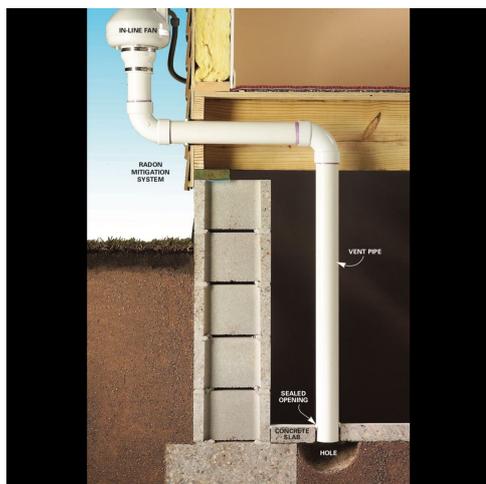
## Finding a professional to install a radon mitigation system

Minnesota requires non-residential radon mitigation professionals to be licensed, effective January 1, 2019. Due to a court order, residential mitigation professionals are not required to be licensed through MDH at this time. [Find a Radon Mitigation Professional](#)

## 10 step guide to the radon mitigation process

1. Radon test reveals the home has a radon problem.
2. Contact licensed radon mitigation professionals to request bids.
3. Professional does a walk-through of the home to identify the mitigation system to install.
4. Review key questions with professional, and request a proposal.
5. Review bids and select a professional.
6. Professional may perform diagnostic testing to ensure the proper fan size and correct installation.
7. Professional seals cracks and openings in the basement.
8. Professional installs the radon mitigation system.
9. Professional provides a full explanation of how the system operates to the homeowner.
10. Retest the home to ensure the system has reduced radon levels.

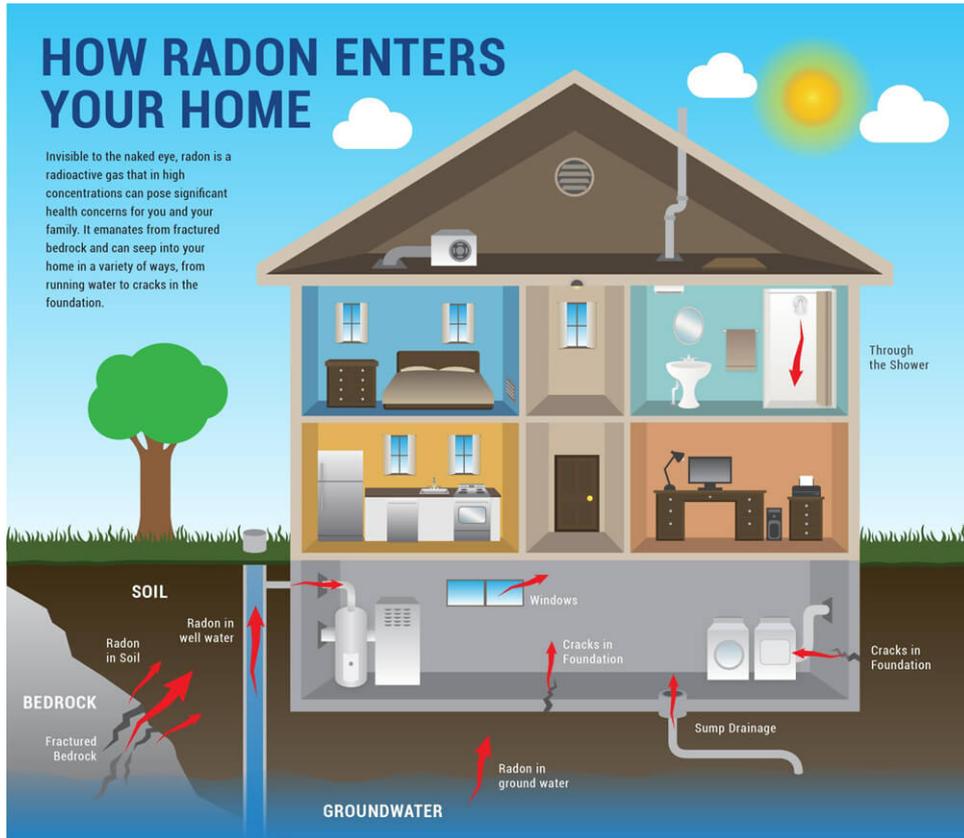
## What to look for in an installed system



1. Radon reduction systems must be clearly labeled. This will avoid accidental changes to the system which could disrupt its function.
2. The exhaust pipe(s) of soil suction systems must vent above the surface of the roof and 10 feet or more above the ground and at least 10 feet away from windows, doors, or other openings that could allow the radon to reenter the house, if the exhaust pipe(s) do not vent at least 2 feet above these openings.
3. The exhaust fan must not be located in or below a livable area. For instance, it should be in an unoccupied attic of the house or outside – not in a basement!
4. A u-tube manometer must be installed to alert you if the system stops working properly.
5. A post-mitigation radon test should be done no sooner than 24 hours after your system is in operation with the fan on and last at least 48 hours.
6. Attached written operating and maintenance instructions and copies of any warranties.

## How Radon Enter The Home

**Radon** is a naturally occurring radioactive gas produced by the breakdown of uranium in soil, rock, and water. Because of the difference in pressure, your **home** acts like a vacuum, drawing **radon** in through foundation cracks and other openings. As we try to make our home more air tight, your **home** then traps the **radon** inside, where the concentration level increases over time.



## Radon Home Monitors

Monitoring radon in your home is a crucial step in ensuring the health and safety of you and your loved ones.

### Radon Facts:

All homes have some level of Radon

Radon can increase the risk of lung cancer

Radon in homes can be reduced significantly

Ave Cost of Radon Testing \$175 - \$200

EPA Recommends testing annually (including homes with a radon system)

Radon levels change over time and due to changing weather.



A RadonEye Pro Continuous Radon Monitor allows you to constantly stay on top of the amount of radon present in your home. [Order one today](#) and get 5% off with promo code **PROSPEX-2020**.

# INSPECTOR PROFILE



Name: **Glenford Blanc**      Email Address: **sales@pro-spex.com**

Licence Number: **MD 29749**

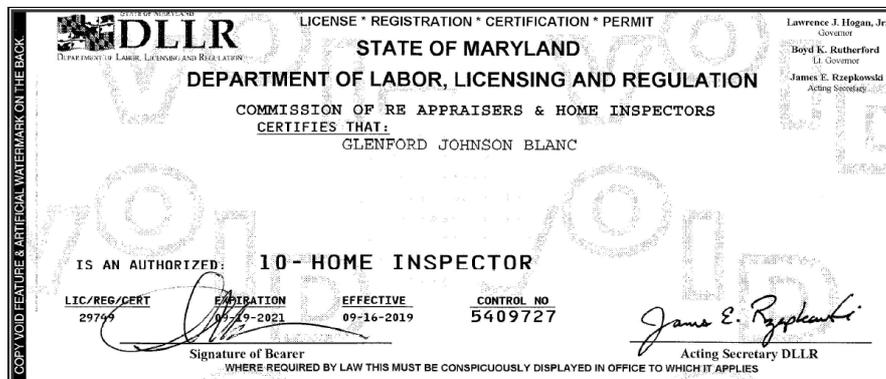
## Association Information:

**InterNachi** | **08111306**

**Maryland Association of Home Inspectors** | **26223446**

**National Association of Commercial Building Inspectors** | **NACBI**

## Inspectors Certification



## Association Logo



## Conclusion

### Conclusion

While no level of radon gas is completely safe, as with most things in life we must balance the benefits and costs to find our own "acceptable" levels. We walk outside and work in the sun, exposing ourselves to ultraviolet radiation and increasing our risk of developing skin cancer. We drive in automobiles almost every day even though greater than 1 in 86 deaths is a result of automobile accidents. People smoke, eat poorly, and engage in dangerous behaviors on a daily basis. To some degree, radon gas is another daily risk that we all must take. However, you choose what you eat, whether or not you smoke, and how and when you drive. You have no choice but to breathe the air in your home. A simple and [inexpensive radon test](#) can give you the information you need to make an informed decision about what level of radon gas exposure is acceptable to you.

## Radon Home Monitor

All homes should have a Radon monitoring system, just like smoke and carbon monoxide detectors. Save the RadonEye home monitor with promo Code PROSPEX-2020, Visit our website for more information, or [CLICK HERE](#).



SINCERELY,

PRO SPEX HOME & COMMERCIAL INSPECTION SERVICES