

# Radon & YOU:

*What you need to know to protect you and your family*



 **AMERICAN LUNG ASSOCIATION®**  
IN IOWA

**IOWA RADON  
COALITION**

# What is radon?

Radon is a colorless, odorless, tasteless, radioactive gas that is produced from the decay of naturally occurring uranium in the soil.

84 Po Polonium (212) (1996)	85 At Astatine (210) (1996)	86 Rn Radon (222) (1996) (17230)
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When this gas enters buildings and is breathed in, decay products damage lung tissue and can result in lung cancer.

## Where is radon found?

Radon can be found anywhere. Levels in the exterior environment are typically very low, however due to pressure differentials, levels in indoor environments may be dangerously high. The age, type of foundation, or location of a house are not indicators of radon gas levels. The only way to know the level of radon gas in any building is to perform a test.

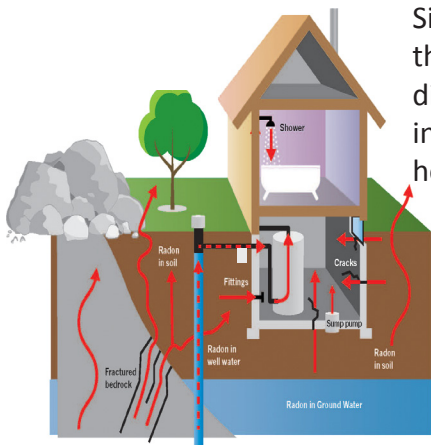
## Who is at risk?

Everyone is at risk for developing lung cancer from exposure to radon gas. To date, there is no evidence that age or overall health influences this risk. However, smokers who are also exposed to elevated levels of radon have an especially high risk of developing lung cancer.

**“Indoor radon is the second leading cause of lung cancer in the United States and breathing it over prolonged periods can present a significant health risk to families all over the country.”**

- Dr. Richard H Carmona, US Surgeon General

## How does radon get into a home?

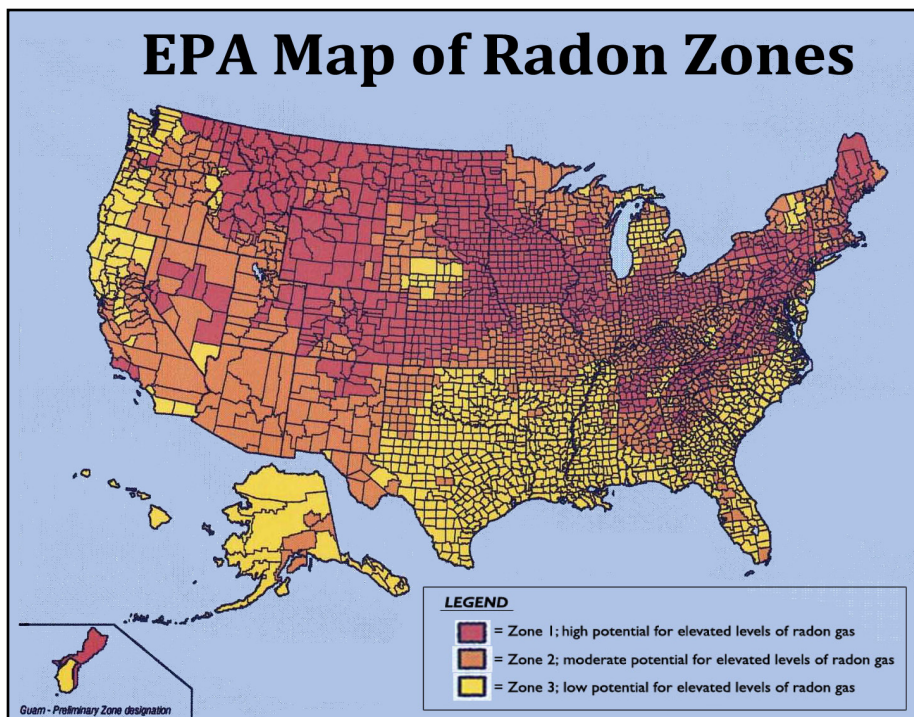


Since radon is a gas, it will rise up through the soil. Due to pressure differentials between outdoor and indoor environments, radon is pulled into houses as it reaches the surface. Radon gas enters the building through any openings between the building and the soil, including: cracks in walls and floors, construction joints, gaps around service pipes/ wires, and sump pits. The type of foundation (i.e.: basement, crawl space, slab on grade,

or combination) is not a factor affecting radon gas levels; elevated levels of radon gas have been measured in houses with all foundation types. 1

# What is the risk in Iowa?

- An estimated **400** deaths per year in Iowa are caused by radon-induced lung cancer, about the same number of annual death as seen in Iowa for traffic fatalities. (United States Environmental Protection Agency, US EPA, and Iowa Department of Transportation)
- US EPA surveys in Iowa have found that **7 in 10 homes** contain radon concentrations above the US EPA's radon action level of 4 picoCuries/Liter (pCi/L).
- Iowa **leads** the nation in the percent of homes over the 4 pCi/L as well as percent of homes over 20 pCi/L.
- The average indoor radon concentration in Iowa is more than **six times** the national average.
- **All of Iowa is located in Zone 1 (red) indicating Iowans have a very high potential for elevated levels of radon gas.** Zone 2 (orange) indicates a moderate potential for elevated levels of radon gas, and zone 3 (yellow) indicates a low potential for elevated levels of radon gas. Regardless of the potential, elevated radon levels can be found in every state in the nation.



(USEPA, EPA-402-F-93-013; <http://www.epa.gov/radon/zonemap.html>)

# How do I test my home?

Radon is not detectable with human senses, however testing is easy to perform and low cost. Radon tests are characterized as either short-term or long-term. Short-term tests include charcoal canister and charcoal scintillation devices and require 2-90 days for completion. Long-term tests include alpha track devices and require 90 days - 1 year for completion.

Short-term test kits can be obtained from the American Lung Association in Iowa by calling 1-800-788-5864 or from the Iowa Radon Hotline by calling 1-800-383-5992. Short-term and long-term test kits can also be purchased at most hardware stores or at manufacturer web sites.



When testing, be sure to follow directions on placement and time period closely and contact the Iowa Radon Program or company that produced the kit with any questions regarding the testing procedure or interpreting the results.

If you do not want to perform your own test, the Iowa Department of Public Health's Radon Program staff can provide a list of licensed radon measurement professionals. Contact them at 515-281-4928 or visit [www.idph.state.ia.us/eh/radon.asp](http://www.idph.state.ia.us/eh/radon.asp).

## What do my results mean?

Most test kits will provide you with results measured in picoCuries per liter (pCi/L). The USEPA has set an action level of **4.0 pCi/L** and recommends that buildings over this level have radon mitigation services performed to reduce the level of exposure.

### Testing Strategy:

Perform an initial short term test and if the results are:

Below 4.0 pCi/L	Consider performing a long term test or re-test in two years.
Between 4.0-8.0 pCi/L	Follow up with another short term or long term test. If the average of the two tests is greater than 4.0 pCi/L mitigation system installation to reduce levels is recommended.
Greater than 8.0 pCi/L	Follow up with another short term test. If the two tests are in agreement, it is highly recommended that a mitigation system be installed to reduce levels.

However, it is important to note that there is no safe level of radon. Numerous scientific studies have shown that even radon levels below 4 pCi/L pose some risk, and you can reduce your risk of lung cancer by lowering your radon level as low as achievable.

# *How do I take care of a radon problem?*

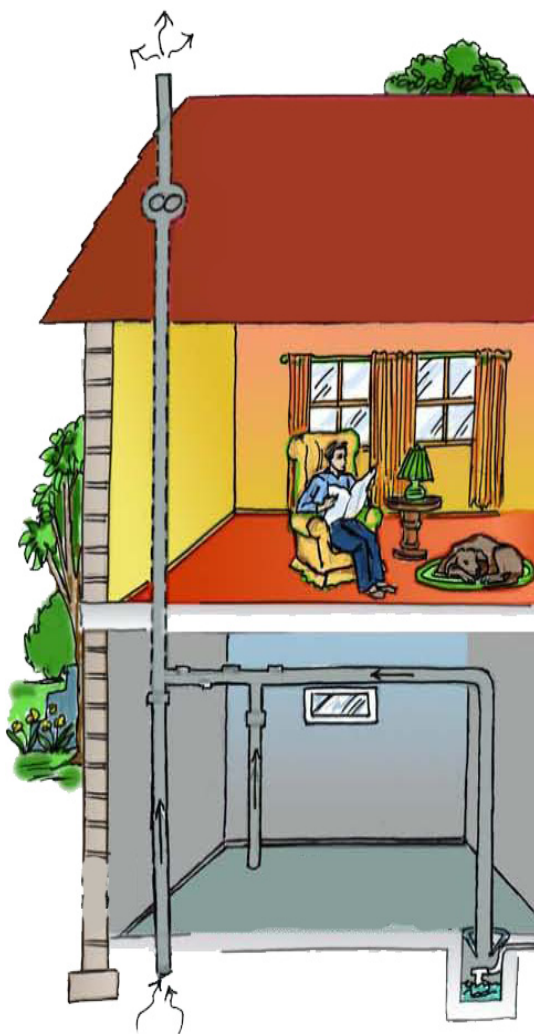
Performing work to lower indoor radon levels is called radon mitigation. Numerous types of radon mitigation have been developed. The most common and effective is a vent pipe and fan system that draws air from underneath the foundation of the house and disposes of it outside. This radon mitigation system removes radon from under the foundation and vents it above the roof line of the house so that it does not enter the home.

The exact design and cost of a mitigation system is dependent upon numerous factors including:

- Size of house
- House design
- Foundation type
- Sub-slab material

The cost of a radon mitigation system installed by a certified contractor is comparable to the price of other home improvements/ maintenance; ranging from \$800 to \$2,500, depending on the characteristics of the home and choice of radon reduction methods. Nationwide, the average cost of a radon reduction system is about \$1,200.

Iowa Department of Public Health's Radon Program staff can provide a list of licensed radon mitigation professionals. Contact them at 515-281-4928 or visit [www.idph.state.ia.us/eh/radon.asp](http://www.idph.state.ia.us/eh/radon.asp).





# ***Radon Resistant New Construction***

New houses can be built radon resistant; called radon resistant new construction (RRNC). The most common technique of RRNC is called a passive radon reduction system. Typically, passive radon reduction systems installed in RRNC are very similar to mitigation systems described within this document without a fan installed. The USEPA states a RRNC passive system should consists of:

- 4-inch layer of gas permeable sub floor preparation (usually clean gravel)
- Plastic sheeting underneath the foundation to help prevent the soil gas from entering the home
- 3 or 4-inch PVC pipe extends from under the plastic sheeting to the roof, safely venting radon and other soil gases above the house.
- Sealing and caulking all openings in the concrete foundation to reduce soil gas entry into the home.
- An electrical junction box in case an electric venting fan is needed later.

Not only will you be protecting your family from a dangerous carcinogen, but installing a passive radon reduction system during construction can save you money. Adding radon-resistant features to a new home will typically add between \$150 - \$500 to the cost of the home, in comparison to the \$800 - \$2500 to fix an existing house. Passive radon reduction system components can also be incorporated into the building design and hidden from view, making the home more aesthetically pleasing.

Just because a house is built radon resistant does not mean radon levels could not become elevated. It is suggested that a test be performed every two years to ensure levels are maintained at a low level. If levels do become elevated, it is easy and cheap to have a venting fan added to the system.

## ***Contact Information***

For more information, inquiries, or questions you can contact:

**Iowa Radon Hotline:**

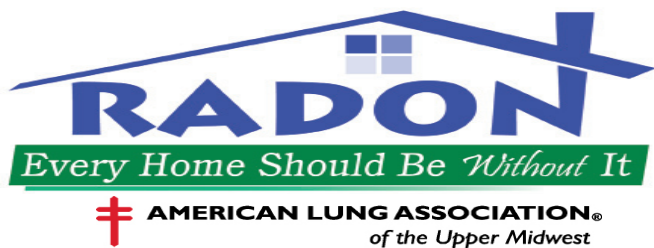
phone: 1-800-383-5992

website: [www.idph.state.ia.us/eh/radon.asp](http://www.idph.state.ia.us/eh/radon.asp)

**American Lung Association in Iowa:**

phone: 1-800-788-5864

website: [www.healthhouse.org](http://www.healthhouse.org)



Want to test your home to see if you are at risk? It's **EASY**! Fill out this form and mail it with a \$10 donation per test kit to the American Lung Association of the Upper Midwest and receive a short term test kit in 7-10 business days. You can also order a radon test kit by going online to [www.healthhouse.org/radon](http://www.healthhouse.org/radon) or call 1-800-788-5864.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/ State/ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Foundation Type: \_\_\_\_ Basement \_\_\_\_ Slab on Grade \_\_\_\_ Crawlspace

How many people are living in the home: \_\_\_\_\_

How many years have you lived in the home: \_\_\_\_\_

Where did you obtain this booklet?: \_\_\_\_\_

How many test kits would you like?: \_\_\_\_ x \$10 donation = \$ \_\_\_\_\_

Mail form and donation to:

American Lung Asscoation of the Upper Midwest  
Attn: Radon Test Kit Program  
3000 Kelly Ln.  
Springfield, IL 62711

