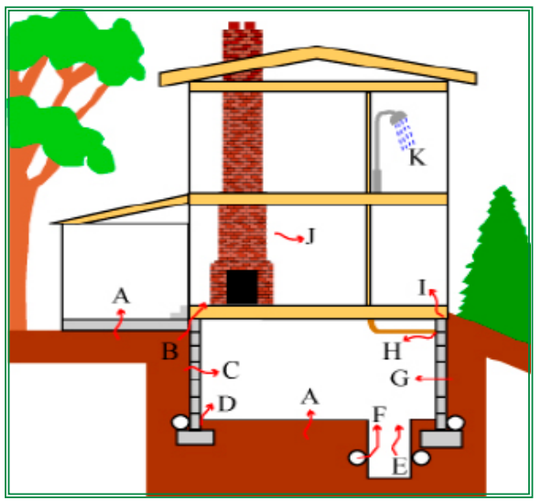
## Major Radon Entry Routes

A. Cracks in concrete slabs.
B. Spaces behind brick veneer walls.
C. Pores and cracks in concrete blocks.
D. Floor-wall joints.
E. Exposed soil (i.e. sump or crawl space)
F. Drain tile, if drained to an open sump.
G. Mortar joints.
H. Loose fitting pipe penetrations.
I. Open tops of block walls.
J. Building materials.
K. Well water (not as common as radon entering home from the soil)




## How Do I Know If I Have A Radon Problem?

The only way to know if you have a radon problem in your house is to test. Radon test kits can be purchased from the National Radon Program Services (http://sosradon.org/test-kits) or you may hire a radon measurement provider. Free test kits are also available from DHEC by calling 1-800-768-0362 (toll-free) or send an email to radon@dhec.sc.gov.

## Where Should I Test?

Test the lowest level of the home that is regularly used or planned to be used. For example, if you spend or plan to spend time in the basement, DHEC recommends testing in the basement.

## What Do I Do If I Have A Radon Problem?

Contact a contractor to get an estimate to fix your home. A list of certified contractors for radon measurement or mitigation contractors can be found by contacting DHEC's Radon Program, or by visiting the American Association of Radon Scientists and Technologists' National Radon Proficiency Program's (NRRP) website: aarst-nrpp.com

or the National Radon Safety Board's website (NRSB): www.nrsb.org.

## Retesting For Radon

You should retest your home every 2–5 years or if you make any major changes to the home, such as building an addition, finishing a basement, buying a new heating system or adding central air conditioning.

## Radon in Water

Groundwater in some areas of the state may contain high levels of naturally occurring radioactive elements. Public water systems are tested for these elements. If you have your own well, and live in certain areas of the state, you should consider having your water tested. To learn more about areas in South Carolina that may have high levels of radioactive elements, how you can have your well water tested, and treatment methods, see our website at www.scdhec.gov/drinkingwater or call the Bureau of Water at (888) 761-5989.

### For More Information:

S.C. DHEC Radon Toll-free: (800) 768-0362
Radon Website: www.scdhec.gov/radon
Email: radon@dhec.sc.gov

Environmental Protection Agency (EPA) Radon Hotline:
(800) SOS-RADON (767-7236)
Radon Website: www.epa.gov/radon

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# What You Need To Know About
# Radon And Your Health

**SURGEON GENERAL'S WARNING:**
**Radon causes lung cancer.**

dhec
Healthy People. Healthy Communities.
S.C. Department of Health and Environmental Control

## What Is Radon?

Radon is a natural, radioactive gas. It forms when uranium breaks down in soil, rock and water. You can't see, smell or taste radon. It gets into the air you breathe indoors, primarily from soil under your home and other buildings.

## Health Effects Of Radon

Radon is the second leading cause of lung cancer in the United States, second only to smoking, and is responsible for more than 21,000 deaths annually in the nation. Radon is a risk because it decays into radioactive particles that can get trapped in your lungs when you breathe. These particles break down and release small bursts of energy that can damage lung tissue and lead to lung cancer. Your chances of getting lung cancer from radon depend mostly on how much radon is in your home, the amount of time you spend in your home, and if you smoke or have ever smoked.

## Radon Action Level

The U.S. Environmental Protection Agency (EPA) has an action level for radon at 4.0 picoCuries/liter (pCi/L). This means you should install a radon reduction system in your home if the radon level is 4 pCi/L or higher. Radon reduction systems are installed by qualified professionals and the cost is similar to other common home repairs. Levels below 4 pCi/L can also pose a health risk and in many cases can be reduced. You can reduce your risk of lung cancer by lowering your radon levels.

Radon test kit

## How Much Radon In A Home Is Safe ?

Any amount of radon carries some risk, even at or below the recommended action level. The risk of lung cancer increases with higher long-term exposures to radon. Because it isn't possible to reduce radon exposure to zero, the best approach is to lower it as much as possible. Even homes that are built with radon reducing techniques do not guarantee lower levels of radon. Therefore, people must protect themselves from radon exposure in their own home by testing for radon regardless of geographic location, style, age of the home, or the presence of radon reducing techniques.

The following table shows the amount of risk from radon at several different concentrations. These are estimates of lung cancer risk due to long-term exposure to radon. The risk estimates were adapted from the EPA's Assessment of Risks from Radon in Homes. They show that there is no "safe" level of radon and that risk increases with higher levels of radon. The risk to smokers from radon is significantly higher than for non-smokers.

### Radon Risk if you've never smoked:

| Radon Level | If 1,000 people who never smoked were exposed to this level over a lifetime*... | WHAT TO DO: |
|---|---|---|
| **20 pCi/L** | About 36 people could get lung cancer | Fix your home |
| **10 pCi/L** | About 18 people could get lung cancer | Fix your home |
| **8 pCi/L** | About 15 people could get lung cancer | Fix your home |
| **4 pCi/L** | About 7 people could get lung cancer | Fix your home |
| **2 pCi/L** | About 4 people could get lung cancer | Consider fixing between 2 and 4 pCi/L |
| **1.3 pCi/L** | About 2 people could get lung cancer | (Reducing radon levels below 2 pCi/L is difficult.) |
| **0.4 pCi/L** | | |

### Radon Risk if you smoke:

| Radon Level | If 1,000 people who smoked were exposed to this level over a lifetime*... | WHAT TO DO: Stop smoking and... |
|---|---|---|
| **20 pCi/L** | About 260 people could get lung cancer | Fix your home |
| **10 pCi/L** | About 150 people could get lung cancer | Fix your home |
| **8 pCi/L** | About 120 people could get lung cancer | Fix your home |
| **4 pCi/L** | About 62 people could get lung cancer | Fix your home |
| **2 pCi/L** | About 32 people could get lung cancer | Consider fixing between 2 and 4 pCi/L |
| **1.3 pCi/L** | About 20 people could get lung cancer | (Reducing radon levels below 2 pCi/L is difficult.) |
| **0.4 pCi/L** | About 3 people could get lung cancer | |

Note: If you are a former smoker, your risk may be lower.
**pCi/L** (pico Curies per Liter)
* Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).
** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.

## How Does Radon Get Into Your Home?

Radon, because it is a gas, is able to move through spaces in the soil and into areas of the house that are in contact with the soil. Air pressure in your home is usually lower than pressure in the soil around your home's foundation. Because of this difference in pressure, your house acts like a vacuum (suction) that pulls radon in through foundation cracks and other openings. Some causes of home vacuum are:

- Heated air rising inside the home (stack effect).
- Wind blowing past a home.
- Air used by fireplaces, wood stoves, and furnaces.
- Air vented to the outside by clothes dryers and exhaust fans in bathrooms, kitchens, or attics (vacuum effect).