

Clean Indoor Air

Tip Sheet #13

# Radon



Helpful websites:

- Centers for Disease Control and Prevention (CDC): <http://www.cdc.gov>
- Environmental Protection Agency (EPA): <http://www.epa.gov/iaq>
- Consumer Products Safety Commission (CPSC): <http://www.cpsc.gov>
- Alaska Housing Finance Corporation (AHFC): <http://ahfc.state.ak.us/>

Did you know that what you can't see can potentially harm you?

Radon is an odorless, colorless, tasteless gas that is produced by naturally decaying uranium and radium. Uranium and radium is naturally found in soil and rock throughout the world. It is typically concentrated in areas with lots of granite, shale, phosphate, and pitchblende. As radon decays, it forms radioactive by-products called "progeny", "decay products", or "daughters" which can be inhaled and cause damage to lung tissue. The Environmental Protection Agency (EPA) recommends that all homes in the United States be tested for radon gas.

Exposure to radon gas increases your risk of developing lung cancer. Radon gas and radon progeny in the air can be breathed into the lungs where they break down further and emit "alpha particles". Alpha particles release a small burst of energy, which are absorbed by nearby lung tissue. This results in lung cell damage or death. There are no immediate symptoms in relation to radon exposure. Your risk of developing lung cancer from radon depends on the concentration of radon in the air you breathe and the length of time you are exposed. The EPA estimates that 15,000 lung cancer deaths each year in the United States are due to radon exposure, which makes it the second leading cause of lung cancer in the United States following smoking. Smokers are at higher risk of developing radon induced lung cancer than non-smokers.

While radon is common outdoors, it is diluted to very low levels and is not a concern. However, radon that enters an enclosed space, such as a home, can sometimes accumulate to high levels. Radon gas is drawn into homes or buildings through cracks in the foundation or slab and through unsealed pipes, sumps, drains, walls and other openings. Elevated radon levels have been identified in every state. The EPA estimates that 1 of every 15 homes in the United States has indoor radon levels at or above the EPA's recommended action guideline level of four picocuries per liter of air (pCi/L).

Testing for radon is simple and relatively inexpensive. There are two general tests for radon, short-term and long-term. These test kits can be purchased through the mail, local health departments, hardware stores, or other retail outlets. When looking for a radon testing lab or mitigation professional, make sure you choose one that is certified by either the National Environmental Health Association (NEHA) or the National Radon Safety Board (NRSB). Depending on the test, the kit remains in your home for 48 hours to 90 days. The most common short-term tests are "charcoal canisters," "electret ion chamber," and "continuous monitors." Because radon levels tend to vary from day to day and season to season, short-term tests are less likely to measure your annual radon exposure.

*Steps to follow for a short-term test:*

- Be sure to follow manufacturer's instructions
- Close all doors and windows at least 12 hours before testing and keep closed during test period. Residents are permitted to enter and leave the home during testing.
- Place kit in the lowest occupied level of the home.

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[www.aklung.org](http://www.aklung.org)

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276-LUNG  
1-800-LUNGUSA

These guidelines are for use in maintaining or renovating your home with the goal of improving the quality of the air you breathe indoors. This project is funded by Alaska Housing Finance Corporation. American Lung Association of Alaska and Alaska Housing Finance Corporation are not to be held liable and do not make any guarantees regarding the outcome of consumer implementation of these guidelines. "Healthy Breathing Begins at Home" guidelines are not intended to be construed as medical advice or replace the consultation of a physician or specialist in any way. For answers to lung health questions, you can speak directly with a registered nurse or respiratory therapist at no charge by calling the American Lung Association Call Center at 1-800-LUNGUSA.

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LUNG  
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of Alaska

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- Put kit in a general use area such as a bedroom, family room, or office. (Do not place in crawl space, furnace room, laundry room, kitchen, bathrooms, or enclosed areas such as cabinets.)
- If possible, put kit 3 to 5 feet off the floor and 3 to 5 feet away from exterior walls.
- Do not test during extreme weather conditions.
- Minimize operation of bathroom or kitchen exhaust fans or nonessential exhaust appliances during test.

*Long-Term Testing:*

- Long-term tests remain in your home for more than 90 days. "Alpha track" and "electret" detectors are commonly used for this type of testing. A long-term test will give a more accurate annual average radon level than a short-term test for your home.

The average indoor level is estimated to be about 1.3 pCi/L; and 0.4 pCi/L of radon is found in the outside air. Action should be taken to reduce levels if the test results indicate an annual average radon level of 4 pCi/L or higher.

*Steps to follow for a long-term test:*

- Be sure to follow manufacturer's instructions.
- Place kit in the lowest occupied level of the home.
- Put kit in a general use area such as a bedroom, family room, or office. (Do not place in crawl space, furnace room, laundry room, or enclosed area.)
- If possible, put kit 3 to 5 feet off the floor and 3 to 5 feet away from exterior walls.

With today's technology, indoor radon levels can be reduced to below 4 pCi/L; in most cases, to 2 pCi/L or less. A variety of methods are used to reduce indoor radon levels, from sealing cracks in floors and walls to changing the flow of air into the home. Simple systems, known as sub-slab depressurization, use pipes and fans to remove radon gas from beneath the concrete floor and foundation before it can enter the home. Radon is then vented out above the roof, where it safely disperses. Other methods may also work in your home. The right system depends on the design of your home and other factors.

Lowering high radon levels requires technical knowledge and special skills. You should use a contractor who is trained to fix radon problems. The EPA Radon Contractor Proficiency (RCP) Program tests these contractors. A trained RCP contractor can assess the radon problem in your home and help you choose the right treatment method.

When hiring a contractor for any home repair, you may want to get more than one estimate. The cost of making repairs to reduce radon depends on how your home was built and the extent of the radon problem. Most homes can be fixed for a reasonable cost.

Today, homes can be built to reduce the amount of radon coming in by using radon-resistant construction features. Radon-resistant construction features usually keep radon levels in new homes below 2 pCi/L.

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