

Healthy Indoor Air Series

Radon

What is radon?

Radon is an indoor pollutant—a colorless, odorless, radioactive gas that results naturally from the decay of uranium and radium. Uranium is naturally present in the soil.

Where is radon found?

Every home has the potential for elevated levels of radon. It is not usually a question of “Is there radon?” but rather, “How much radon is there?” As warm air rises and leaves through openings in the roof, air seeps in from the soil around and under the house.

Radon gas enters through cracks in the foundation floor and walls, hollow-block walls, and openings around floor drains, pipes and sump pumps. Radon can also come from building materials such as rocks used in making a fireplace or cement.

How do I know if my house has elevated levels of radon?

The only way to know if you have radon in your home is to test for it. Since 1988, the Office of the Surgeon General has recommended that the lower floors of homes be tested.

A short-term test of two to seven days will quickly tell you the radon level in your home. Simply place a radon detector in a designated area. After the prescribed number of days, seal the detector and mail it to a lab.

Long-term tests of three months to one year show the yearly average of radon in the home. They provide the most accurate information. Test kits are available at some public health departments, retail stores, and through the mail. The Illinois Emergency Management Agency has a list of reputable companies that sell radon detectors.

There are 14,000 to 21,000 estimated lung cancer deaths each year due to radon.

What are the health effects of radon?

The U.S. Environmental Protection Agency says that “radon is believed to be the second leading cause of lung cancer in America, second only to smoking.”

Radon can be inhaled into the lungs, where it undergoes radioactive decay. As it decays, radon releases tiny bursts of energy called alpha particles, which can harm lung tissue by damaging the DNA. Damaged DNA can lead to lung cancer. The problem is that the cancer may not be diagnosed for many years. However, not everyone exposed to elevated levels of radon will develop lung cancer.

How is radon measured?

Radon is measured in picoCuries per liter of air (pCi/L), a measurement of radioactivity. The U.S. Environmental Protection Agency and the Centers for Disease Control and Prevention recommend that homes with radon levels of 4 or more pCi/L be fixed.

The indoor radon average nationwide is 1.3 pCi/L. The average outside air in Illinois has a level of 0.6 pCi/L.

When should I test for radon?

While you can test any time during the year, winter is recommended if you use a short-term test. Follow the directions that come with the detector. Remember to close exterior windows and doors for 12 hours before doing the test. Keep the house closed and fans turned off until the test is finished. When you're finished, mail in the detector. Test results will usually be sent to you within 2 weeks. It is safe to enter and exit the home while you are doing the test.

What do the results mean?

If the test results show less than 4 pCi/L of radon, nothing needs to be done. Test again in 2 to 3 years. If the radon level is between 4 to 9.9 pCi/L, test again with a long-term test using an alpha track detector for 3 months to a year.

If you have 4 or more pCi/L of radon after the second test, contact a licensed professional mitigator to determine how to remove the radon.

A depressurization system may need to be installed in the basement, crawl space, or under a slab on grade foundation. The cost ranges from \$500 to \$2500 for the system.

While the depressurization system is being installed, the professional mitigator should seal the cracks and openings in the foundation or basement walls and floor.

Can I prevent radon pollution during new home construction?

The builder can install a passive radon-reduction system while the house is under construction at a cost of about \$350 to \$500. Once the home is completely finished, test for radon. If there is a high level of radon, a licensed mitigator can install a special fan in the attic and attach it to a pipe from the passive radon reduction system. The fan will pull radon and other soil gasses from under the house and out the pipe. Test the home for radon every 2 to 3 years to make sure the system is working.

For more information

Contact your local U of I Extension office or visit these web sites:

University of Illinois Extension
<http://www.solutions.uiuc.edu>

Healthy Indoor Air for America's Homes
<http://www.healthyindoorair.org>

Illinois Emergency Management Agency
(1-800-325-1245)
www.state.il.us/iema

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