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Leona K. Hawks
Utah State University

Andria B. Hansen
Utah State University

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RADON

*Leona K. Hawks, Professor, Extension Housing Specialist
Andria B. Hansen, Family Life Center Assistant Director*

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What is Radon?

Radon is an odorless, tasteless gas that causes no immediate symptoms or health effects. It occurs from the natural radioactive decay of uranium and radium in the soil. The radioactive decay products of radon, charged ions, have a static charge that enables easy attachment to water vapor, dust, and smoke particles in the air. It enters the home through cracks and openings in the concrete that are in contact with the ground—in a basement, for example. It can also enter the house through the water where wells have been in contact with soil containing radon. Radon is measured in units called picoCuries per liter (pCi/L) of air. Annual radon levels above 4 pCi/L are considered excessive and require remediation.

Health Effects of Radon

Radon gas decays into radioactive particles that can get trapped in your lungs when you breathe. As they break down further, these particles release small bursts of energy that can damage lung tissue and can cause lung cancer. Not everyone exposed to elevated levels of radon will develop lung cancer. And the amount of time between exposure and the onset of the disease may be many years. People who smoke and are exposed to radon gas over time have a ten times greater risk of contracting lung cancer.

Your chances of getting lung cancer from radon depend mostly on: 1) how much radon is in your home, 2) the amount of time you spend in your home, and 3) whether you are a smoker or have ever smoked.

Sources of Radon

Radon occurs from the natural radioactive decay of uranium and radium in the soil and comes from various sources. It can come from well water, natural gas, and, in rare cases, some building materials (such as concrete containing radium).

How Does Radon Enter Your Home?

1. There must be uranium in the soil.
2. Pathways for radon to enter indoors must be present (holes, cracks, plumbing, sumps).
3. Air pressure indoors must be lower than in the surrounding soil.

All three conditions must be present to have a radon problem!

If you reduce any one of these conditions, less radon will enter your home. The last two conditions,

determined by the house and its construction, are the key ones for mitigation.

Detection of Radon

Different parts of the country have different levels of radon. If you live in a high-risk area for radon, or if neighbors have found high levels, you should take this potential threat seriously. Because every home is built differently, even neighboring homes can have very different levels. The only way to find out about radon in your home is by testing. Remember, generally the recommended level of radon, in the United States, is below 4 picoCuries per liter (pCi/L) of air.

Look for radon test kits that say “meets EPA requirements.” An inexpensive screening test that lasts four to seven days and costs \$5 to \$15 can give a rough idea of how much radon is present. The test should be conducted when windows and doors are closed and placed in the basement. If a high level of radon is found, a second long-term test (at least three months’ duration) is recommended to give more accurate information about radon in the home. (Note that radon induction into homes is maximum during winter months.)

Reducing Radon Problems

If an unsafe level of radon is verified by the second test, there are a variety of things you can do to reduce radon. These involve either plugging the leaks—such as caulking cracks in basement walls—or changing the ventilation patterns of your home so that radon isn’t drawn inside. Check with your state radon office at the Department of Environmental Quality (DEQ) at (801) 536-4250, Cooperative Extension, local contractors, or health agencies for advice. A trained and certified radon mitigator can be invaluable in helping you reduce radon in your home. Sellers of homes are required by state law to disclose known radon problems.

Help is available, often locally, for mitigating radon. Good information resources include your State Department of Health or your State Radon Contact. You can call the EPA’s toll-free Indoor Air Quality Information Clearinghouse at (800) 438-4318 for a current listing of State Radon Contacts.

EPA also has a national hotline if you suspect your drinking water is a source of radon. The toll-free number is (800) 426-4791. This national service will supply phone numbers and local addresses of state-certified water testing laboratories throughout the country. These labs can advise citizens about testing water and also about local conditions where radon in water may be a concern. However, you should always test the air in your home for radon before testing well water.

Sources: Healthy Indoor Air for America’s Homes (3rd ed.), *Radon in the Home Instructional Module*; and *Home*A*Syst: An Environmental Risk-Assessment Guide for the Home*. Funding for this brochure from Healthy Indoor Air for America’s Homes: CSREES, EPA, MSU

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