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Invisible and Odorless, Radon Poses Risks to Lungs

HealthDay

By **Dennis Thompson**

HealthDay Reporter | HealthDay – Mon, Jul 11, 2011

FRIDAY, March 11 (HealthDay News) -- It may be hard to think of radiation as a present and serious environmental health concern in the United States, much less one with the potential to affect nearly every home in the country.

But a radioactive gas known as radon is responsible for an estimated 21,000 lung cancer deaths every year, according to the U.S. National Cancer Institute.

"It's the second leading cause of lung cancer, and, for non-smokers, it is the leading cause of lung cancer," said Kristy Miller, a spokeswoman for the indoor environments division of the U.S. Environmental Protection Agency. "It is invisible and odorless. It causes no symptoms. You possibly may be breathing in high levels and not even know it."

Radon gas is created by the breakdown of uranium in rocks, soil and water. It seeps up through the ground and into homes through foundation cracks and crawl spaces.

"It's a naturally occurring decay product of uranium," said Dr. Michael Thun, vice president of epidemiology and surveillance research for the American Cancer Society. "Radon is one of the avoidable known carcinogens to which many people are exposed at a range of levels. Compared to cigarette smoking, it's a very small risk, but across the population, it is a significant risk. And, it is avoidable."

Outside, radon seeping up from the ground floats away into the atmosphere, causing no harm. But a building acts as a container for any radon seeping up from beneath it, capturing the gas and allowing it to concentrate.

Houses in the Northeast and Midwest tend to have higher radon levels than those elsewhere in the United States, Thun said.

And don't think that new homes are less likely to have dangerous levels of radon. "Any type of home, regardless of its age or where it's located, has the potential of having high levels," Miller said. "If your home has contact with the earth, which most homes do, then your home has a chance of having a high level of radon."

The best bet for protecting yourself and your family from long-term radon gas exposure is to check for high levels in the house.

"If one lives in an area where radon is prevalent, it's a good idea to have your home tested," Thun said.

The EPA recommends a two-level test for radon. First, a homeowner should buy a short-term test kit, a small device that is left in the house for two days to 90 days, depending on the kit.

The test kit, Miller said, should be put:

- In a spot where it will have access to the same air that's inhaled by the home's occupants.
- Away from doors and windows.
- At a level that's not too high nor too low.
- On a shelf or someplace where it won't be jostled.

At the end of the testing period, the homeowner sends the radon kit to a lab for analysis, Miller said.

If the test shows that the radon level registers at 4 picocuries per liter of air, a second test should be done, according to EPA recommendations. The follow-up test can be another short-term test or a long-term test, which takes more than 90 days. If the average of the two tests remains above 4 pCi/L, then the homeowner should consider having the house fixed.

This process, called radon mitigation, can cost from \$800 to \$2,500, depending on what must be done to the house, Miller said.

Workers will go through the house to seal up places through which radon can enter, including:

- Cracks in walls and solid floors.
- Gaps in construction joints and suspended floors.
- Gaps around pipes.
- Cavities inside walls.

Radon also can be vented away from the home using PVC pipes that are sunk into the ground. "You want to take that soil gas and vent it from underneath your home or foundation before it ever gets inside," Miller said.

People should re-test their houses for radon regularly, he said, particularly if something happens to disturb either the house or the ground beneath it. A new addition may have been built, renovations done or excavation performed, or the homeowner may simply have noticed that the foundation has shifted.

People having a new house built can take preemptive measures against potential radon contamination by asking for certain construction techniques and features that reduce the risk of radon.

"It's most cost-effective to do it when you're building a new home," Miller said. "Ask your builder to include radon-resistant features."

The most important thing to remember, the experts say, is that radon is just about everywhere.

"Radon is a natural substance within the Earth's crust," Miller said. "It's there in the soil. The issue is, is your particular home going to allow it to seep in?"

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The U.S. Environmental Protection Agency offers more information in [A Citizen's Guide to Radon](#).

A companion article has more on [detecting radon](#).

How Radon Leads to Lung Cancer

(HealthDay News) -- Living with radon can be a risky proposition, health-wise.

As the U.S. Environmental Protection Agency explains it, radon gas that seeps into a house decays into radioactive particles that can become trapped in the lungs of people who breathe in the radon-containing air. As the particles break down further, they release small bursts of energy.

That's what can damage the lungs and lead to lung cancer over the long term. The time between exposure and development of the disease can be years, the agency says.

Not everyone exposed to radon will develop lung cancer. But there's no way to know who will and who won't.

Experts do know, though, that radon exposure combined with smoking raises the risk. It goes down when radon levels are curtailed and smoking ends.

The agency also notes that children have been found to be at greater risk than adults for some cancers linked to radiation. Whether that holds true for radon, though, is unclear.

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