

Radon and Lung Cancer

Have You Tested for This Hidden Cause of Lung Cancer?

By [Lynne Eldridge, MD](#)  | Updated March 16, 2019

Radon is the second leading cause of lung cancer after smoking and the number one cause of [lung cancer in non-smokers](#). The public tends to think of lung cancer as occurring in only smokers, but that is far from the truth. Lung cancer in non-smokers is the 6th leading cause of cancer deaths in the United States. Thankfully, as with smoking, this risk should be entirely preventable through awareness and testing.

But too few people have tested their homes.

The public was saddened when the wife of *Superman*, Dana Reeve died of lung cancer at the young age of 46. Statistically, radon would be the most likely cause. While secondhand smoke was broadcast in the news as a possible culprit, [secondhand smoke](#) causes around 7,000 lung cancer deaths per year. Radon is responsible for roughly 27,000 cancer deaths per year - and these deaths occur because of an unseen gas present in the haven of our homes (women and children may be at greatest risk.) To put this further in perspective, around 39,000 women die each year from breast cancer. If we had a test which could entirely prevent over half of breast cancer deaths, it's likely we have heard. Sadly, [the stigma which portrays lung cancer as a smoker's disease](#) has interfered with getting the word out about radon.

What Is Radon?

Radon is an odorless, colorless gas that is released from the normal decay of uranium in the soil. Radon can enter homes through cracks in the foundation, floors, and walls, through openings around sump pumps and drains, and through gaps around pipes. Radon may also be present in the water supply in homes that have well water. It doesn't matter if your home is old or new. In fact, newer homes may be more tightly sealed -- allowing radon gas to build up to a greater degree. It also doesn't matter what your neighbor's radon level is (though if they have an elevated level your risk is higher.) Levels vary greatly even in a single geographical area.

How Does Radon Cause Cancer

Radon gas is a radioactive gas. These radioactive substances have unstable nuclei that emit particles in the process of becoming more stable. When radon gas is inhaled, it emits alpha particles which in turn damage DNA present in lung cells. Over a period of time and with further damage, these cells undergo the genetic changes which then deem them cancer cells.

Testing

All homes should be tested for radon, though some regions are more likely to have elevated levels. The Environmental Protection Agency (EPA) has a [Radon Zone Map](#) for those interested in looking up the risk in their state. Overall, 1 in 15 homes in the US is estimated to have an elevated radon level, and globally, the World Health

Organization estimates that up to 15 percent of lung cancers worldwide are due to radon exposure.

You can hire someone to [test your home for radon](#), but simple test kits under \$20 are available at most hardware stores. These kits are usually placed in the lowest living area in the home and left in place for a few days. The kit is then sent to the manufacturer who returns a report with a radon level.

What Do the Results Mean?

In the United States, a radon level over 4pCi/L (pico curies per liter) is considered abnormal and should be repaired. Repair should also be considered for levels between 2pCi/L and 4pCi/L. In Canada, any level over 2pCi/L is considered abnormal. To understand the significance of these levels, the Environmental Protection Agency has done a risk assessment for radon in homes. A radon level of 4pCi/L is considered five times more likely to result in death than the risk of dying in a car crash.

Radon Mitigation

If radon results are elevated, repairs usually cost between \$800 and \$2500. Certified contractors can be found through the EPA's state radon contact site. If you are building a new home, check into [radon-resistant construction](#).

With Concerns or to Learn More About Radon

- National Radon Hotline – 1-800-767-7236
- National Radon Helpline – 1-800-557-2366
- National Radon Fix-It Line – 1-800-644-6999

Article Sources

- Choi, J., Park, S., Noh, O., Koh, Y., and D. Kang. [Gene mutation discovery research of non-smoking lung cancer patients due to indoor radon exposure](#). *Annals of Occupational and Environmental Medicine*. 201. 28:13.
- Environmental Protection Agency. Radon. Updated 05/17/16. <https://www.epa.gov/radon>
- Yoon, J., Lee, J., Joo, S., and D. Kang. [Indoor radon exposure and lung cancer: a review of ecological studies](#). *Annals of Occupational and Environmental Medicine*. 2016. 28:15.