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ACS News Center

Radon Risk for Lung Cancer Back in the Spotlight

Second Leading Cause of Lung Cancer in US

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A recent study in *BMJ* (Vol. 330, No. 7485: 223-228) serves as a potent reminder that smoking isn't the only factor doctors and patients should consider when discussing lung cancer risk. European researchers report that exposure to radon gas in the home accounts for about 9% of lung cancer deaths and about 2% of overall cancer deaths in Europe.

The findings are based on an analysis of 13 studies of residential radon and lung cancer involving 7,148 lung cancer patients and 14,208 people without lung cancer. The authors, led by Sarah Darby, PhD, of Radcliffe Infirmary, Oxford, UK, assessed lung cancer risk based on measurements of household radon and personal characteristics such as smoking history, age, sex, and area of residence.

Radon Seeps Into Homes From the Ground

Radon is an odorless, colorless, flavorless radioactive gas that arises naturally from the breakdown of uranium in the earth. Because it filters up from soil, it is found throughout the environment. Outdoors, radon amounts are so small they pose virtually no risk; indoors, however, the gas can become concentrated. Over time, breathing radon exposes the lungs to radiation that can boost the risk of lung cancer.

Darby and colleagues calculated that lung cancer risk increases by 8.4% for every 100 becquerels per cubic meter (Bq/m^3) of radon indoors. The US Environmental Protection Agency (EPA) recommends taking action to lower indoor radon when the gas reaches concentrations of 4 picocuries per liter (pCi/L), which is equivalent to 148 Bq/m^3 .

"These results are consistent with those of earlier studies, including one from the United States," said Elizabeth Ward, PhD, director of surveillance research for the American Cancer Society. "But this study has larger numbers of people resulting in greater statistical power and better ability to separate the results of radon exposure from the results of smoking."

The European group found that radon raised risk by about the same amount in smokers and nonsmokers. However, because smokers are already at higher risk for lung cancer, the double-whammy of smoking and radon makes radon a bigger threat for smokers.

Get Home Checked, Surgeon General Urges

The risks of radon have been known for decades and were based primarily on studies of miners exposed to extremely high levels of the gas while working underground. Calculating the potential risks to the general public is more difficult because radon exposure is highly variable depending on where people live and what type of residence they occupy -- radon levels vary according to soil type and concentrations tend to be greater in lower levels of a home, such as the basement.

The EPA has recommended radon testing in homes for years, and in January 2005 the US Surgeon General issued a national health advisory on the subject. The advisory said radon is the second leading cause of lung cancer in the US (smoking is first) and causes more than 20,000 lung cancer deaths in the country each year. Venting systems can be installed in homes to lower indoor radon levels and reduce the risk.

"It would be good for doctors to talk to their patients about the risks of radon," Ward said, "particularly in those parts of the country where the potential for radon exposure in homes is high."

The EPA estimates that 1 in 15 US homes have excessive levels of radon. The agency provides a county-by-county map of estimated radon levels on its Web site. Consumer information describing the risks of radon, how you can fix your home to lower the risk, and ways to find qualified contractors to perform the work are also available.