

Ridding a home of radon

The odorless, colorless gas has been linked to lung cancer.

By Beth W. Orenstein
Special to The Morning Call

David Pierce had heard about radon — a radioactive gas that has been linked to lung cancer — on the TV news. So, late last year, when he and his wife, Lauri, made an offer on a three-bedroom home in Bath, they asked that it be tested for radon.

The initial reading on the house was more than four times the level the U.S. Environmental Protection Agency considers safe.

The Pierces negotiated with their seller, who paid about \$900 to have a mitigation system installed. After the system was installed, the home was retested and found to have almost no radon.

While radon doesn't get as much attention as it did 20 years ago, many real estate and health experts believe it is a serious health issue and, because it's easily fixed if high levels are found, they recommend testing as the Pierces did.

Radon is a radioactive gas released by some types of rocks and soils as they break down in the natural decaying process. The colorless, odorless gas percolates up through the soil and, when released into the air, dissipates quickly. However, radon that seeps into a home gets trapped and can collect to high levels.

How much radon seeps into a house depends how it



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MARK DILTS of WPB Enterprises installs a radon mitigation system in the basement of the Nickischer home in Moore Township. The systems typically work by patching openings where radon in the soil can seep into a home and by providing a vent to the outdoors.

is built, the amount of radon in the soil under and around it, and the composition of that soil, says Arick Amspacker, owner of HomeRadonTest.com in Bethlehem.

Radon enters the home through cracks in foundations, openings around sump pumps and drains, construction joists and crawl spaces,

and cracks in floors and walls. The EPA estimates nearly one in 15 homes in the United States has elevated radon levels.

Usually, radon levels are highest in basements and ground-level rooms in contact with soil.

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How to hire a contractor for radon remediation

The cost of a contractor fixing a home with high levels of radon generally ranges from \$800 to \$2,500, depending on the characteristics of the house and choice of radon reduction methods. The average cost of a radon reduction system is about \$1,200.

Choose a contractor to fix a radon problem just as you would choose someone to do other home repairs. Get more than one estimate, ask for references, and contact some of those references to ask if they are satisfied with the contractor's work.

Make sure the contractor will:

■ **Provide** references or photographs as well as test results of before and after radon levels of past radon reduction work.

■ **Explain** what the work will involve, how long it will take to complete, and exactly how the radon reduction system will work.

■ **Inspect** your home's structure before providing an estimate and explain the charges for the diagnostic tests that will determine what type of system will be used.

■ **Provide** a written estimate of the total cost of the job, including all taxes, and how much, if any, is required for a deposit and when the payment is due in full.

■ **Detail** warranties and any other optional features associated with the hardware components of the mitigation system. The contractor also should declare whether any warranties or guarantees are transferable if you sell your home.

■ **Provide** proof of state certification and/or professional proficiency or certification credentials as well as proof of liability insurance and being bonded.

■ **Test** after installation to make sure the radon reduction system works well.

A FAMILY PORTRAIT of Brent Nickischer, his fiancée and their daughter Morgan Nickischer. With a young one, Nickischer was especially eager to have the house tested and treated for radon.

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Evidence is mixed on medical effects of the gas

Pierce says he would have been more concerned about the initially high levels found in his home if the basement were finished, but it's not.

Although radon has been present forever, in the early 1980s, a number of scientific studies linked it to lung cancer in humans.

Over the years, some scientists have questioned whether low radon levels, such as those found in residences,

increase the risk of lung cancer because studies of the problem have produced varied results. Some have shown a relationship between radon and lung cancer, some have not.

The national and international scientific communities agree that the residential studies have been too small to provide conclusive information about radon health risks.

However, major scientific organizations continue to believe that about 12 percent of lung cancers annually in the United States are attributable to radon. Indeed, the U.S. Surgeon General says as many as 21,000 lung cancer deaths a year can be attributed to radon.

Smokers have a higher risk of developing radon-induced lung cancer. Lung cancer usually occurs five to 25 years after exposure. Radon is not known to cause any short-term health effects such as shortness of breath, coughing, headaches or fevers.

No laws in Pennsylvania require homes to be tested for radon when being bought and sold. However, home sellers who know their house has a radon problem are required to disclose it to potential buyers.

Most real estate agents recommend that buyers ask for radon tests before finalizing their offer.

Mary Gedney of Re/Max of the Valley in Emmaus, says: "There is a good deal of printed information that we can give to buyers to help them make a decision on whether or not to have a test ... but we suggest they go ahead and have the test to determine what the radon level is."

Because the real estate market has been so hot lately, "many buyers have been afraid to put contingencies on," especially if they know the property has multiple offers, says Tim Musser, of T.A. Musser Radon Remediation in Allentown. "They'll take the house as is and test and remediate later if necessary."

Radon is measured in picocuries per liter of air. A picocurie is one-trillionth of a curie, the unit of measure for radioactive material. The EPA recommends that action be taken to reduce indoor radon levels that are above 4 pCi/L.

Even if high levels of radon are found, the sale usually doesn't fall apart, Gedney says. The buyer and seller simply negotiate the cost of mitigation. Most homes can be reduced to 2 pCi/L or below.

"It does not jeopardize the transaction if both parties want to complete the transaction," Gedney says.

Pierce, Gedney says he wanted the seller to fix the problem so it wouldn't be an issue in the future. "Later on, if we decide on moving, it's taken care of. I won't have to go through hoops," he says. In most cases, the buyer

pays for the initial radon test. Amspacker charges \$125 if the test is done in conjunction with a home inspection. His cost for the test alone is \$140, but prices can vary from company to company.

A radon test kit for a real estate transaction has to be tamper-proof. That's why it costs more than the kits that homeowners can buy at hardware stores, through the mail, or online from sites such as Amspacker's. The kits range in price from \$10 to \$45 and should say, "meets EPA requirements" on the package.

Kits are available for short-term tests, which remain in the house for two to 90 days, or for long-term tests, which stay in the home for 90 days to a year. Most real estate transactions use short-

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ARICK AMSPACKER
owner, HomeRadonTest.com

term kits to be able to complete the transaction.

Each house on the street may have a different level, Amspacker says. "Having a neighbor whose house has tested high or low for radon is no guarantee that your house will test similarly," he says. The only way to know if a house has a high level of radon is to test it. Homes should be tested periodically, he adds.

If the test shows a high level of radon is present, most times the situation can be easily corrected, Amspacker says.

Mitigation costs anywhere from \$800 to \$2,000, says William Brodhead of WPB Enterprises in Springtown. "About \$800 is an easy system, and \$1,000 to \$1,200 is more expensive. Occasionally, it runs \$1,500 to \$2,000."

The cost has nothing to do with the age of the house or the level of radon, but how much work needs to be done to seal cracks and openings and add ventilation, Brodhead says.

Typically, a reduction system consists of plastic pipe connected to the soil either through a hole in a slab or beneath a plastic sheet in a crawl space. Attached to the

pipe is a quiet, continuously operating fan that discharges the radon outdoors.

"Most mitigation jobs require two men, and, we're in and out in a day," Musser says.

After a mitigation system is installed, the house must be retested at an additional cost.

Even new construction needs to be tested, Amspacker says.

Many builders install radon systems routinely when building homes today.

"Radon mitigation is one of those 'easy-to-do' touches that wards off the sometimes unknown," says Chuck Hamilton, executive officer of the Lehigh Valley Builders Association. "I honestly don't know a builder who doesn't install a mitigation system routinely."

Hersh Ruhmel of Ruhmel Contracting Inc. in Orefield, who builds about 12 homes a year ranging in price from \$250,000 to \$900,000, says he has been installing radon reduction systems ever since "it became well known that there was radon in the area."

He started, he says, because companies weren't allowing their transferees to buy homes that had radon. "In order to circumvent the testing issue, we started putting them in every house regardless of the location or the conditions."

Also, Ruhmel says, it's more economical to install the system at the beginning of construction than when the home is complete. "We didn't want to burden clients later on," he says.

Dr. Brent Nickischer, assistant medical director of the Airport Road Emergency Center in Allentown, had his home in Moore Township tested when it was built earlier this year.

Nickischer also had his well water tested, which can be another source of radon.

The house test came back with levels more than 30 times normal. "That's when I said, 'OK, time to know more about it,'" he recalls. "So I went on the Internet and educated myself to ask the right questions."

Nickischer spent about \$1,000 to have WPB install a reduction system with 4-inch pipe rather than the 3-inch that the builder used. It was worth it to him, he says. "I have a 19-month-old daughter, Morgan, and she's my concern."

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