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FEATURED

Safety Watch: Simple kits are first step to address radon hazard in homes

By Stephanie Leonard
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Photo of the short-term radon test kit set up in the basement.

Photo by Stephanie Leonard

Do you know the radon concentration inside your home?

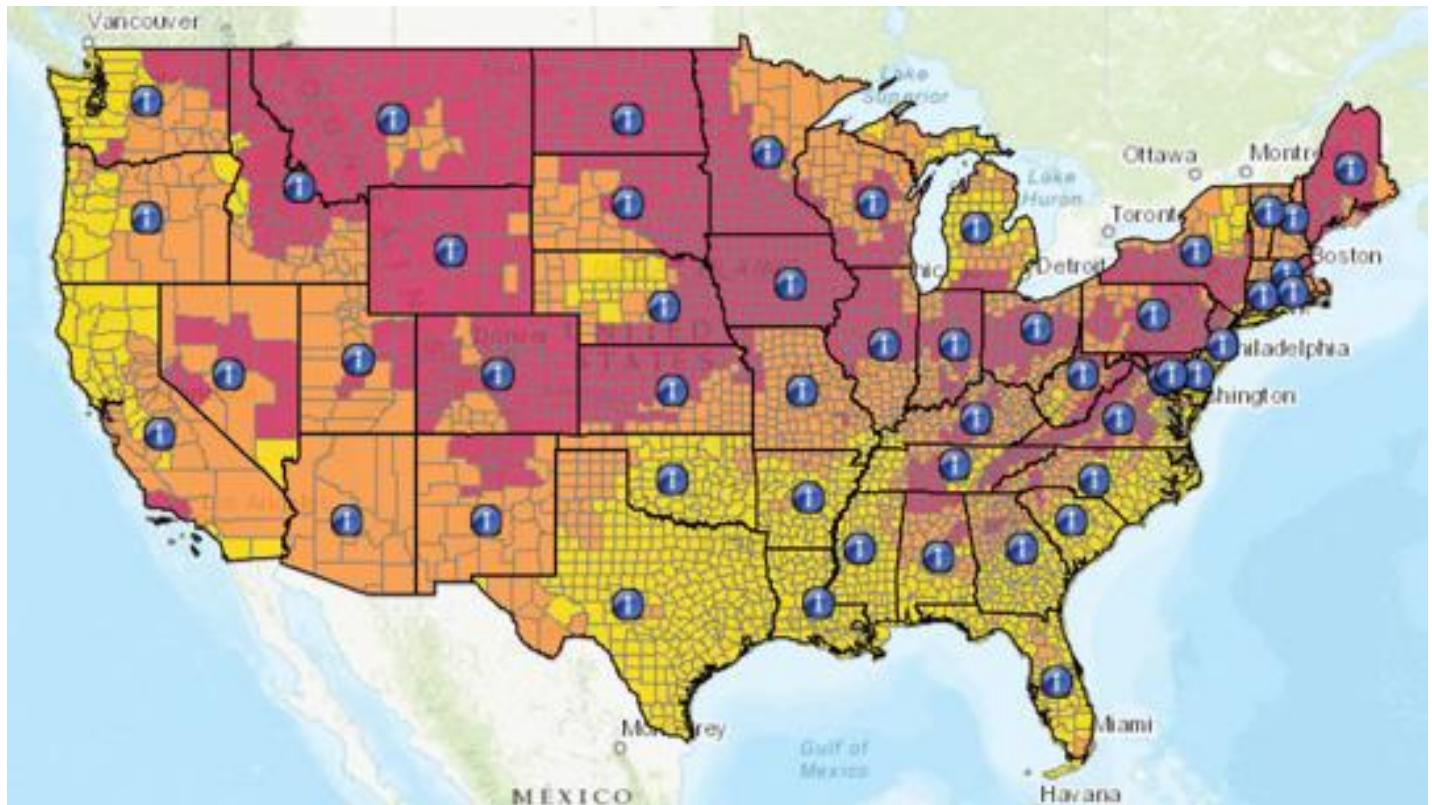
If you haven't bought, built or remodeled your home recently, you likely won't answer that question with actual test results. Speculating or assuming — based on your neighbor's test — doesn't cut it.



For me (and maybe you, too), it's been easy to shrug off what might seem like another "vague worry." After all, mice and the occasional snake seemed to be surviving OK in my basement...

After putting this niggling topic on my back burner for too long, something clicked last month. Maybe it was the confluence of a deeper appreciation of good health, mulling over some easy, practical New Year resolutions, and reading another article with the oft-cited facts:

Radon is the leading cause of lung cancer for non-smokers. It's virtually ubiquitous in Midwestern soils. Indoor levels can easily build to many times the outside concentration, in any type of house. No health symptoms warn of elevated levels.



Map courtesy www.epa.gov/radon/

I had no good excuse for sticking my head in the sand — where there is undoubtedly more radon than in the air! — and decided it was past time to find out just how involved testing was, what I'd learn from it, and if this information might be helpful to pass along.

I knew radon was a health hazard from the good research and outreach work of colleagues Dr. Bill Field and Dr. Chuck Lynch at the University of Iowa. Fifteen years ago, I'd volunteered my 1870 house — with its old brick and block foundation — as a test site for field studies on this carcinogen that moves through soil into buildings.

When I learned then that the radon concentrations measured in my unfinished, rarely-used basement ranged around 9 to 14 picocuries per liter of air (pCi/L) — levels that were two to three times the Environmental Protection Agency's Action Level of 4.0

Radon Zones by County

Radon Data

- Zone 1: Counties with predicted average indoor radon screening levels greater than 4 pCi/L
- Zone 2: Counties with predicted average indoor radon screening levels from 2 to 4 pCi/L
- Zone 3: Counties with predicted average indoor radon screening levels less than 2 pCi/L

pCi/L — I rationalized those not-great-but-not-surprising results with the facts that the big windows in the first and second floors where I lived were drafty in the winter, and usually open in warmer seasons.

In short, I just hoped the radon levels were better upstairs.

Fast forward 15 years.

After replacing drafty windows and doing a construction addition a few years ago that included a deeper, poured basement connected to the old one, the house is tighter, has a bigger foundation footprint, better air circulation and an open stairway connecting the three floors. A passive radon vent was installed during construction.

I still needed to test for radon with this improved configuration to learn if the system was adequate, or if a fan should be added inline to convert the passive system to an active one.

Testing

Last month, I decided to get the job done. Now (gentle nudge) is a good time for testing, since short-term tests should be done during “closed conditions,” i.e., with windows closed and heating or air-conditioning systems operating.

I expected kits would be easy to find in local stores. In the first stores I looked — hardware and farm supply — I didn’t find kits in the plumbing, HVAC or safety equipment departments. I went to a bigger home improvement store and found three options in the plumbing department: short- and long-term kits for radon in air and a third kit to test radon in water.

The kits were designated for test periods of 48-96 hours (short-term) or 91-365 days (long-term). I was surprised at the affordability: \$13.70 and \$22.99, respectively, including free first-class USPS shipping to the certified laboratory.

While long-term kits provide a better determination of radon exposure averaged over different seasons and home conditions, I half-wondered, knowing my memory, how likely I'd recall placing a test kit 8 or 12 months down the road, or recognize the unfamiliar object in my basement!

I double-checked expiration dates stamped on the short-term kits and bought three.

While recommendations advise placing kits on the lowest occupied level of the home, I put two in my basement (though not technically used as living space) where concentrations are likely highest, and one on the first floor.

Given that kits should be returned to the lab within four days of test completion, I opted to sample Saturday morning to Monday afternoon and ship the samples overnight, instead of taking a chance on the predicted 3-day first class shipping. Considering how affordable the tests were, I didn't mind this expense.

Collecting samples was simple and convenient as removing screw-on lids from the small labeled vials, placing them in locations a minimum two feet above floors and three feet from windows and walls, away from moving air, and waiting.

Fifty-two hours later, I recorded the test kit numbers and sampling data online at the lab's website. (entering data online wasn't required, but it allowed for faster turnaround.) I enclosed paper data forms with the kits, and shipped them on Dec. 30, a few hours after testing.

By Jan. 2, results were in my email box.

Results

The reports indicated radon concentrations of 5.7 pCi/L in my first floor living room, and 7.0 and 6.7 pCi/L in the old and new sections of my basement, respectively.

My report included EPA recommendations for taking action to reduce radon levels when results are above 4.0 pCi/L; considering testing water for radon if the residence uses well water and testing for radon at least every two years.

Next steps

I am glad I tested and will follow the EPA recommendation to retest when initial results exceed 4.0 pCi/L.

I plan to do another short-term test over 96 hours, a long-term test over several months, and to collect a water sample from my well. None of these tests are expensive, and they'll provide additional information to compare to my original tests.

In the meantime, I plan to check on cost and installation for converting my passive vent to an active vent with an operating fan.

I'm also getting short-term kits for my family to test and will ask my local farm store if they can carry test kits to purchase.

Lastly, I encourage you to take the easy and important steps to test your own home. Visit the EPA's "A Citizen's Guide to Radon" at <https://bit.ly/2Ft8X02> and watch this video for more information <https://bit.ly/2R4IMU2>.

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Radon is...