

## Frequently Asked Questions

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## Radon Myths and Truths

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### Q1. Why test for Radon?

**A.** Radon is a radioactive gas that has been found in homes all over Ohio. It is produced as a by-product of the natural breakdown of uranium in soil, rock and water, and so eventually gets into the air you breathe. It is the second leading cause of lung cancer in Ohio, claiming an average of 900 lives each year. It causes more deaths than all the drownings, fires, and airline crashes combined.

### Q2. How long should I test?

**A.** The US EPA protocols require that all short-term tests be conducted for a minimum of 48 hours. During the tests, all windows and doors should be kept closed and ventilation and exhaust fans should be turned off. Ideally, however, you should do one year-long test or several short-term tests throughout the year to determine the annual average radon concentration.

### Q3. What do my readings mean?

**A.** The US EPA has set an "action level" of 4 pCi/l (picocuries per liter). Levels above that amount carry enough risk of lung cancer from exposure to radon to warrant action.

**Q4. If I am buying a home, what should I do?****A.** If the home has already been tested:

- ☞ Decide whether to accept the test results from the seller or ask the seller to do another test by an ODH-listed tester. (The buyer cannot legally do a test; only the homeowner can.)
- ☞ Perform a long-term test after occupying home.

## If the home has not yet been tested for radon:

- ☞ Make sure the test is done as soon as possible, either by the seller or by a licensed tester.
- ☞ Make sure the test is done in the lowest level of the home which is suitable for occupancy.
- ☞ Consider including provisions specifying who will conduct the test, what type of test to do, costs, additional escrow money for radon mitigation, etc.

**Q5. Should I buy a house with a radon level greater than 4 pCi/l?**

**A.** Radon levels can be brought down to well below the EPA "action level" in most houses. Radon mitigation systems that continuously remove radon from the area below a foundation are the most effective.

**Q6. If I am selling my house, what should I do?****A.** If your home has never been tested:

- ☞ Perform a radon test as soon as possible.
- ☞ If possible, test before putting your home on the market.
- ☞ Test the lowest level of the home which is suitable for occupancy.

**Q7. Is it expensive to install a system to remove radon from a house?**

**A.** A radon mitigation system can be installed for \$600 to \$1200 in most Ohio houses.

**Q8. I've heard radon is not really a problem. Is this true?**

**A.** Although some studies dispute the precise number of deaths due to radon, all the major health organizations (like the Center for Disease Control, the American Lung Association, and the American Medical Association) agree with the US EPA's estimate that radon causes about 17,000 preventable lung cancer deaths every year in the U.S.

**Q9. Why should I use a listed or state-licensed tester?**

**A.** Under Ohio law the homeowner may perform radon tests on his/her own home. Anyone else performing such a test must be licensed by the State. See [List](#).

**Q10. How much will it cost to add radon-resistant features during construction of a new home?**

**A.** According to the US EPA, radon-resistant features typically add only \$350 to the cost of building an average house. Many of these features are already included in homes built in Ohio and, thus, the added cost may be as low as \$100.

**Q11. How much time does radon remediation take?**

**A.** According to the US EPA, sealing the foundation is the most time consuming part of radon-resistant construction. The time involved varies from house to house, but is usually just a few hours. This time will be minimized if the house design is simple, with few penetrations in the slab.

**Q12. Are any special skills or equipment needed to install radon-resistant features during construction of a new home?**

**A.** Installing radon-resistant features requires only standard plumbing, electrical, and construction skills. A caulk gun for sealing is the only special piece of equipment needed. The material required is available at building supply stores.

**Q13. I am building a new home. What does my builder have to do to install radon-resistant features during construction?**

**A.** According to the US EPA, many of the features which make a house radon-resistant are already used by builders around the country. First, a layer of gas permeable material (such as gravel) is placed where the house's slab will be poured. This layer is then covered with plastic sheeting. The concrete slab is poured to minimize cracking, and all floor assemblies in contact with the soil are sealed. Any other places where radon could enter the home are also sealed. The plastic sheeting and sealant block radon's main entry routes in the house. A length of perforated pipe is installed horizontally beneath the plastic sheeting prior to pouring the slab. This is connected to a vertical, unperforated pipe which extends through the slab and through all floors of the house to vent above the roof. This pipe removes radon from the soil and vents it safely above the dwelling. The gravel beneath the foundation makes it easier for the ventilation system to remove radon, even from the far corners of the foundation.

Electrical junction boxes are installed during construction in case a fan is needed to achieve further radon reductions. Normally, suction on the pipe is provided by natural pressure differences within the house. A fan is needed only if the pressure differences cannot lower radon concentrations to acceptable levels.

**Q14. How can I be sure that radon-resistant techniques work?**

**A.** According to the US EPA, over half a million radon-resistant homes have been built in the United States, mostly in parts of the country with the highest average radon levels. Researchers have found that radon-resistant features lower radon levels to about half of what they would have been without these features.

**Q15. How much will it cost me to run a radon-reduction system?**

**A.** The passive radon-resistant features installed in most houses do not cost anything to run. In fact, sealing the home to prevent radon entry can result in reduced energy costs. While the savings will vary with the climate, size of house and utility prices, the national average is \$65 per year in energy costs saved. If a fan-based ventilation system must be used, the cost of electricity to run it will average \$70 per year. In addition, fans must typically be replaced at 10 to 15 year intervals at a cost of approximately \$150 each. The expected energy savings from sealing the house can help offset these costs.

**Q16. Is there anything my builder can do in case the radon-resistant features described above do not work?**

**A.** Sometimes radon levels in a house are too high to be handled by the type of system described above. If this happens, a fan can be added to the system to increase suction on the pipe. This is called "activating" the system. Installing the fan is easy, because of all the required wiring is already in place. The typical cost of a fan is \$150, and installation takes approximately 1 hour.

**Q17. Aside from the health benefits, are there any other benefits to installing radon-resistant features?**

**A.** Radon-resistant features promote drainage under a house and can reduce moisture problems. As mentioned in the answer to [question #15](#), they also result in energy savings averaging \$65 a year. Building a radon-resistant house is also more visually appealing, as the pipe can be hidden in the internal structure of the house. In retrofitting after construction, it is often more difficult to conceal the pipe.

**Q18. Where in Ohio are the highest levels of indoor radon found?**

**A** The highest levels of indoor radon are found mainly in the north-central, central and west-central parts of the state, and are associated with either the Ohio Shale or with soils developed on glacial sediments. More localized areas of high indoor radon are found in other parts of the state, and these are associated with highly permeable sediments and other poorly understood factors.

**Q19. Why are glacial sediments a source of radon in Ohio?**

**A** The glacial sediments (called "till") in central and western Ohio contain large amounts of limestone and dolostone derived from the older, underlying rocks. Subsequent weathering of these rocks has produced a deep soil on top of the till that is enriched in uranium. The glacial till itself is also uraniumiferous in places where it contains abundant pieces of the underlying Ohio Shale.

**Q20. Why is the Ohio Shale a source of radon?**

**A** The Ohio Shale is a geologic formation consisting of a black, organic- and clay-rich rock. In central and western Ohio, it commonly contains between 10 and 40 parts per million of uranium, and this is 5 to 20 times more uranium than the average rock in the Earth's crust contains. Radon is a by-product of the radioactive decay of uranium.

**Q21. What other earth materials in Ohio are likely to be a source of radon?**

**A** Some localized radon "hot spots" may be associated with relatively permeable and dry sediments. These could be the sands and gravels found on valley floors, or the soils that develop on hillsides. Although such materials may not be enriched in uranium, they can still cause high indoor radon levels by making it easier, by virtue of their permeability and dryness, for radon to get to the surface and, hence, into buildings.

**Q22. I have a question related to radon that I would like to share with other homeowners.**

**A.** Please e-mail your question to Dr. Ashok Kumar, [akumar@utnet.utoledo.edu](mailto:akumar@utnet.utoledo.edu). Your question may be edited for both content and length before being posted on the web site.



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**If the home fails the test, who pays to fix it?**

Paying to fix defects in a home is part of the final negotiation procedure between the buyer and seller. Most of the time the seller agrees to pay for it. Sometimes if the house is sold in an 'as-is' condition, then the buyer has to pay for it. And sometimes it's just split between buyer and seller.

There is one very important legal comment that must be made. Elevated radon levels are considered a serious defect in a home. The levels can be reduced - and shouldn't scare you off from buying the home - but can be an important negotiating tool for you. Failure to address serious defects can be cause to withdraw from a real estate transaction. Also, if the home fails a radon test for a potential buyer, and that buyer withdraws from the transaction, the seller **MUST** change the disclosure statement to reflect that the home did fail a radon test. Failure to do so constitutes real estate fraud!

**My Realtor told me not to worry about testing for radon.**

We hope you got that one in writing or in front of witnesses. There have been occasions where the Realtor has ended up paying for a radon system due to situations similar to this. There have also been occasions where the Realtor has ended up paying for the house due to situations like this. As the buyer or seller, the Realtor is there to represent your best interests. It's simple, inexpensive, and in the long run, can save your life.