RADON

FREQUENTLY ASKED QUESTIONS

Contents

1. Where does it come from?

Radon is a naturally occurring radioactive gas that is tasteless, odorless, and colorless. It comes from the radioactive decay (breakdown) of radium, which comes from the radioactive decay of uranium, both of which are found in at least trace amounts in almost any kind of soil or rock. Granites, shales, phosphates, and certain other types of rock have higher than average concentrations of uranium, and as such, may produce higher concentrations of radon. However, elevated radon levels can occur even in areas with low concentrations of uranium in the soil or rocks.

2. What radon level is safe?

There is no "safe" radon level. There is believed to be some risk to be associated with any exposure, and as a general rule, the higher the radon level and the longer the exposure, the greater the risk.

Congress has a set a long-term goal of reducing indoor radon levels so that they are no greater than exposure to ambient (outdoor) air. The average outdoor level is between 0.3 picocuries per liter (pCi/l) and 0.7 pCi/l, and while that level is not yet technologically achievable, many homes can be brought down to levels below 2 pCi/l. In the meantime, we are using a **guideline** of 4 pCi/l. This guideline was selected because the rule of thumb is to keep exposure to radiation **a**s **l**ow **a**s **r**easonably **a**chievable (ALARA), and 4 pCi/l is a reasonably achievable radon level. Whether a home has 100 pCi/l, or 50 pCi/l, or 20 or 10 pCi/l, the current technology is able to bring the level down to below 4 pCi/l for a reasonable amount of money, with a reasonable amount of effort, over a reasonable period of time.

3. What is a picocurie?

A picocurie is a unit of measure for radiation. A curie (named after French physicist Marie Curie) is a way of measuring radioactive decay or disintegration, and it equals 3.7×10^{10} disintegrations per second. "Pico" means "trillionth," so a picocurie is a trillionth of a curie, or one-trillionth of 37 billion disintegrations per second. To put this in perspective, a house having 4 picocuries of radon per liter of air (4 pCi/l) has about 8 or 9 atoms of radon decaying every minute in every liter of air inside the house. A 1,000 square foot house with 4 pCi/l of radon has nearly 2 million atoms decaying in it every minute.

4. Is radon really a health risk? I've heard it is a scam!

Yes, radon is a Class A carcinogen, which means it is known to cause cancer in humans. It is the second leading cause of lung cancer after smoking, and results in approximately 21,000 lung cancer deaths in the United States each year. Not everyone who breathes radon will develop lung cancer. Your risk is determined by such things as how much radon is in your home (and/or workplace, school, or other indoor environment); the amount of time you spend in your home (and/or workplace, school, or other indoor environment); and whether you smoke or have ever smoked. The longer you are exposed, and the higher the radon level, the greater the risk.

5. How do I know if I have a radon problem in my home?

The only way to know whether your home has elevated radon levels is to test your home. There are no physical signs to warn you of the presence of radon, and it cannot be detected with the senses. And since radon levels can vary significantly from home to home, you can't use your neighbor's test results to determine whether or not your home has a problem. Your home must be tested.

6. How does radon get into my home?

Radon enters homes through openings in the foundation floor or walls, wherever the foundation is in contact with the soil. Because it's a gas, radon can travel through the soil, and it generally moves from an area of higher pressure to one of lower pressure. In most cases, the soil is at higher pressure than the house, and if radon is traveling along the foundation, it can be pushed into the lower pressure area through openings such as sump crocks, crawlspaces, space around plumbing or wiring, floor/wall joints, cracks, hollow block walls, or other entry points. Ultimately, tiny or large openings in the foundation floor or walls can act as entry points, and the pressure difference between the soil and the house acts as the driving force that allows radon to enter your home.

7. My home is new/old/drafty/energy-efficient and built on a slab/has a crawlspace/has a basement/has multiple foundations, do I need to worry?

Actually, any home, regardless of age, energy-efficiency, or foundation type, could have a radon problem. The only way to know whether or not a particular home has a problem is to test THAT home.

8. Where can I get a radon test kit or who can test my home?

Radon test kits are available from your local health department or they can be purchased at some hardware stores, home improvement centers, or other retail outlets. They can also be purchased on the internet. If you need a professional tester to help you test your home or a home you're considering purchasing, use an individual who is certified by the National Radon Proficiency Program or the National Radon Safety Board.

9. How much it cost to test?

Most short-term do-it-yourself radon test kits cost between $10 and $20, and long-term kits generally cost between $20 and $50. The kits sold by the local health departments include the price of the test device, the postage to mail it back to a lab out of state, and the lab fees for having the device analyzed. Most kits sold in retail stores or through mail order also include everything in the price, but a few companies charge extra for postage or analysis, so be sure you know what you're getting before you make the purchase!

People involved in real estate transactions often prefer to have a professional perform the measurement for them. Test prices vary depending on the device or instrumentation used by the tester, travel costs, and so on. Prices for professional testing generally ranges from $50 to $150. Be sure the tester you hire understands and follows the testing protocol. Testers are not licensed in Michigan. You are encouraged to use an individual certified by either the National Environmental Health Association (NEHA) or the National Radon Safety Board (NRSB). Contact your local health department for a list of measurement companies or visit the organization websites.)

10. My neighbor tested and didn't find a radon problem. Do I still need to test?

Yes! Radon levels can vary significantly from home to home or land parcel to land parcel. The only way to know whether YOUR home has a radon problem is to test YOUR home.

11. I heard radon was only a problem in Pennsylvania? Why should I test my home here in Michigan?

Though Pennsylvania is an area with a high potential for radon problems, elevated radon levels have been found in every state. In Michigan, one in four homes is expected to have a radon problem, and in some counties as many as 40-50% of the homes could have problems. The only way to know if your home has high radon levels, is to test.

12. Are the "do-it-yourself" kits accurate or should I hire a professional?

Radon testing is not a complicated process, but procedures must be followed if you want an accurate, reliable result. So, if you purchase a quality device, and if you read and follow the instructions, a "do-it-yourself" test kit should be adequate. Follow-up measurements should be made to confirm an elevated radon level. People involved in real estate transactions often prefer to hire a professional to provide an independent measurement of the radon level in the home in question.

13. I have headaches. Could it be radon? What are the health effects of radon?

The only known health effect of radon is an increased risk of lung cancer. Radon does not cause any warning symptoms like headaches, nausea, fatigue, or skin rashes. If you are suffering from those symptoms or other physical ailments, you should contact your physician.

You should still test your home for radon. The only way to know whether you are being exposed to elevated radon levels is to test.

14. If I find a radon problem, what next? Can it be fixed? Who does this kind of work? What does it cost? What do they do to fix a radon problem?

Radon Mitigation System: House Venting Radon Gas

Elevated radon levels can be reduced, but first you should confirm that you really have a problem by conducting follow-up measurements. When a problem has been confirmed, you may want to hire a professional radon mitigation contractor to help you reduce the levels. Radon mitigation contractors are not licensed in Michigan. So, you are encouraged to use an person who is certified by the National Radon Proficiency Program or the National Radon Safety Board.

Occasionally, when the radon levels are fairly close to the guideline of 4 picocuries per liter (4 pCi/l), caulking and sealing radon entry points may be enough to bring the radon down to acceptable levels. However, caulking and sealing does not always provide the reduction you need, and it is seldom a long-term solution to a real radon problem. In most cases, a professional contractor would install a radon mitigation system and provide a guarantee of levels below 4 pCi/l. There are other methods, but a radon mitigation system is the most common technique used in Michigan. A radon mitigation system uses a vent pipe and fans to remove radon vapors from under your foundation and exhaust them above the roof where it's safe, ensuring the radon never enters your home. The cost of a radon mitigation system in Michigan can vary significantly depending on where you are in the state and who you hire. A typical range in price would be $750-$1,500.

15. I'm buying a new home and the inspector found radon. What do I do now? Should I walk away from the deal?

Radon levels can almost always be reduced, so if you like a home, you should buy it. Radon is not a good reason to walk away from the deal. The issue is negotiable between the buyer and the seller. There are a lot of options to consider. For instance, the buyer may ask that the seller fix the problem, or the buyer may choose to take the house "as is" and fix it later when it's more convenient. The two parties may come up with some formula for sharing the costs, or the seller may put money in escrow so the buyer can retest to determine the annual average. In any event, the problem is fixable and shouldn't be a deal-breaker.

16. If I find and fix a radon problem, will I have a hard time selling my home?

There is always a possibility that a future buyer may be confused about radon and view a mitigation system as a bad thing. However, with positive marketing, a radon mitigation system can be a selling point. Other homes in the area may also have radon problems, and positive marketing, a radon mitigation system can be selling point knowing that the problem has already been identified and corrected can be a "plus."

17. Could radon be a problem in my kids' school or where I work?

Yes, radon could be a problem in your children's school or in your workplace. Radon does not distinguish between the foundation of a home, school, office, or other building. If there is a source and entry point(s), radon can enter any building. The U.S. Environmental Protection Agency recommends that schools and workplaces be tested to determine whether radon is a problem. Keep in mind, though, that many people spend much of their time at home, and the home is likely to be the most significant source of radon exposure. While it may be important to test your school or workplace, it is equally important that you test your home!

18. Do testers and mitigators have to be licensed?

Radon testers and mitigators, often called radon reduction contractors, are not licensed or regulated in Michigan. However, there are two national organizations that offer radon measurement and mitigation certification. If you choose to hire a professional to assist you, you are encouraged to hire an person certified by the National Radon Proficiency Program or the National Radon Safety Board

19. Should I test my water for radon?

Elevated indoor radon levels are almost always from radon gas entering the home from the soil. If elevated radon levels are found, it is suggested that the problem be fixed by installing a radon mitigation system. Only if high radon levels continue after installing a radon mitigation system would one look to sample water for radon.