

"Self-insured Workers' Compensation Fund Members"

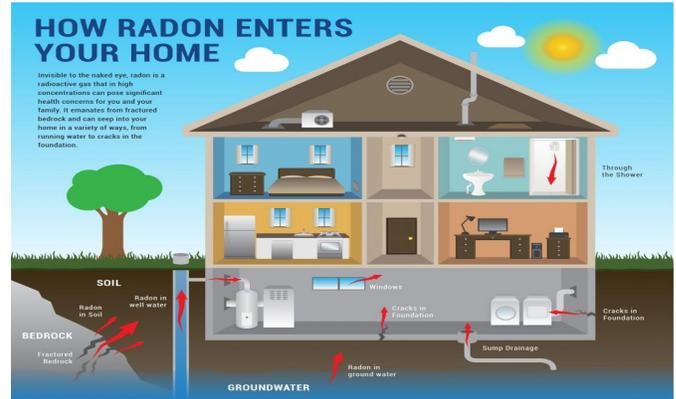
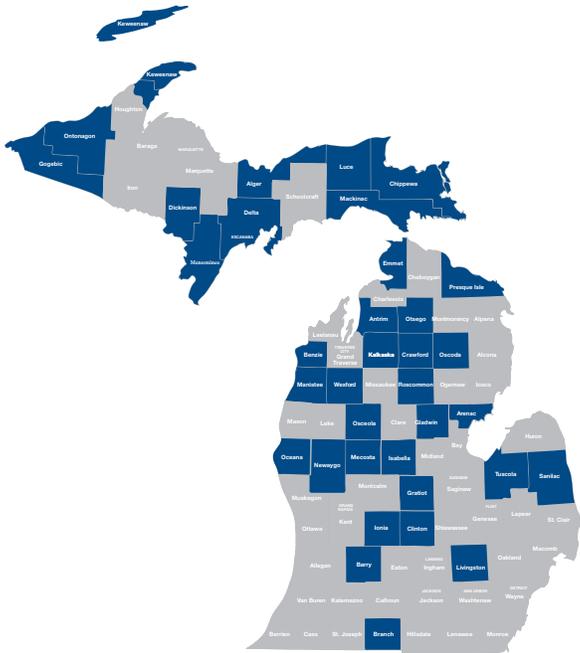
Radon Safety

January is Radon Action Month in Michigan

Did you know that one in every four Michigan homes is expected to have radon levels that exceed the recommended federal action level? This matters because radon is the second leading cause of lung cancer, behind smoking. You can't see, smell or taste radon. The only way to know if you have elevated radon levels is to test.

What is Radon?

Radon is a naturally occurring radioactive gas. Radon is tasteless, odorless, and colorless. It comes from the radioactive decay (breakdown) of radium, which comes from the radioactive decay of uranium. Both radium and uranium are found in at least trace amounts in almost any kind of soil or rock. Granites, shales, and phosphates have higher than average concentrations of uranium. As a result, they 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.



Radon is not chemically reactive with most materials. Hence, it will move freely as a gas through the ground. The first four radioactive isotopes formed as radium decays are polonium-218, lead-214, bismuth-214 and polonium-214. They are commonly referred to as "radon daughters" or "radon progeny." These short-lived isotopes are not gases but are chemically active solids. They are present in any environment where radium was once found and, like radon, cannot be detected by human senses.

The earth is the source of all radon gas in our atmosphere. Since radium and uranium concentrations vary throughout the earth's crust, radon concentrations will also vary in a geographic area. The amount of radon gas that escapes into the atmosphere is dependent on the depth at which it is formed and the permeability of the surrounding earth. Radon formed in the top 10 meters of soil and rock provides the largest component of radon entering the atmosphere. Because they are metallic particulates, radon daughters formed in the soil will not escape.

The second most important contributor to atmospheric radon is from groundwater. Underground radon is carried in groundwater and when this groundwater surfaces, most of the radon is released to the atmosphere.

Other sources of atmospheric radon are very small contributors and are largely due to human activities. For example, there are radium-rich industrial by-products spread upon the earth, and sometimes construction materials are produced from raw materials that contain uranium or radium.

Worldwide, over 2.5 billion curies of radon are emitted annually into the atmosphere. Atmospheric dilution results in a typical outdoor level of between 0.2 and 0.7 picocuries per liter (pCi/l). However, wide variations do exist.

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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 in the United States resulting in approximately 21,000 lung cancer deaths each year. Only smoking causes more lung cancers.

The problem occurs when radon and radon decay products (RDPs) are inhaled. When radon is exhaled, many RDPs are also exhaled, but some of the RDPs stay trapped in the lungs.

As they undergo radioactive decay, they emit alpha energy, and the alpha particles can strike sensitive lung tissue causing physical and/or chemical damage to the DNA. When alpha particles strike and damage a lung cell, the cell will either:

Die, which seems like a bad thing, but new cells are generated to replace dead cells;

Repair itself and heal; or

Try to repair itself but do so incorrectly, possibly leading to the body forming cancer cells.

Not everyone who breathes radon will develop lung cancer.

Your risk is determined by how much radon is in your indoor environment, how much time you spend in that environment, and whether you ever smoked. The only known health effect of radon is an increased risk of lung cancer.

Exposure to elevated radon levels does not result in any warning symptoms like headaches, nausea, fatigue, or skin rashes. The only way to know whether you are being exposed to elevated radon levels is to perform a radon test.

The following national and international organizations support testing for radon and taking steps to reduce elevated radon levels to minimize the chance of getting lung cancer:

- American Lung Association
- American Medical Association
- Centers for Disease Control
- Environmental Protection
- International Commission on Radiological Protection
- National Academy of Science
- National Council on Radiation Protection and Measurement
- U.S. Surgeon General
- World Health Organization

Common Questions on Radon.

Where does radon 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.

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 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 as low as reasonably achievable (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.

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.

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.

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.

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.

Percentage of Elevated Radon Test Results by County



RADON

is the leading cause of unintentional death in the home.



5,410

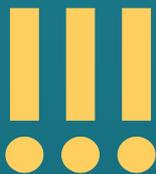
Estimated # of deaths from lung & bronchus cancer in Michigan (2019)



8,070

Estimated # of new lung & bronchus cancer cases in Michigan (2019)

Like cigarettes, radon is a known carcinogen.



It is easy and inexpensive to test your home for radon. Elevated levels of radon can easily be reduced with mitigation. The only way to know if you have a radon problem is to test for it.

Michigan ranks above the national average of 63 per 100,000 people for lung and bronchus cancer incidence.

68 per
100,000
people

Questions? 800-RADONGAS (800-723-6642)

Have you tested your home for radon in the past two years?

THE PROBLEM

- Radon gas has no smell, taste, or color.
- The CDC states that it is the leading cause of death in the home.
- The only way to know if you have a radon problem is to test for it.

THE SOLUTION

- Radon testing is easy and inexpensive.
- If high levels of radon are found they can easily be reduced.

Talk to your doctor about how to protect you and your family.

Questions? Contact the Michigan Indoor Radon Program at 800-RADONGAS (800-723-6642)



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

website: Michigan.gov/radon | email: Radon@michigan.gov