

Radon

In Your Home



About Radon

What is radon?

Radon is a radioactive gas that may be lurking in the air or drinking water in your home. As the second-leading cause of cancer, it's a silent killer. But even though you can't see, taste, or smell radon, there are a few simple, affordable steps you can take to protect yourself and your family.

Where does radon come from?

An unstable chemical element, radon is continuously generated from the decay of other ancient elements and abundant minerals naturally found in the Earth's crust. As radon itself breaks down, other radioactive particles are formed, which also emit powerful ionizing radiation as they continue to decay. Together, radon and its by-products seep into air and groundwater from soil or bedrock, particularly with home construction, well drilling, and mining activities that disturb soil and bedrock. Certain building products made from materials high in radon may also be a source of radon in the home.



How does radon get into my house and where does it go?

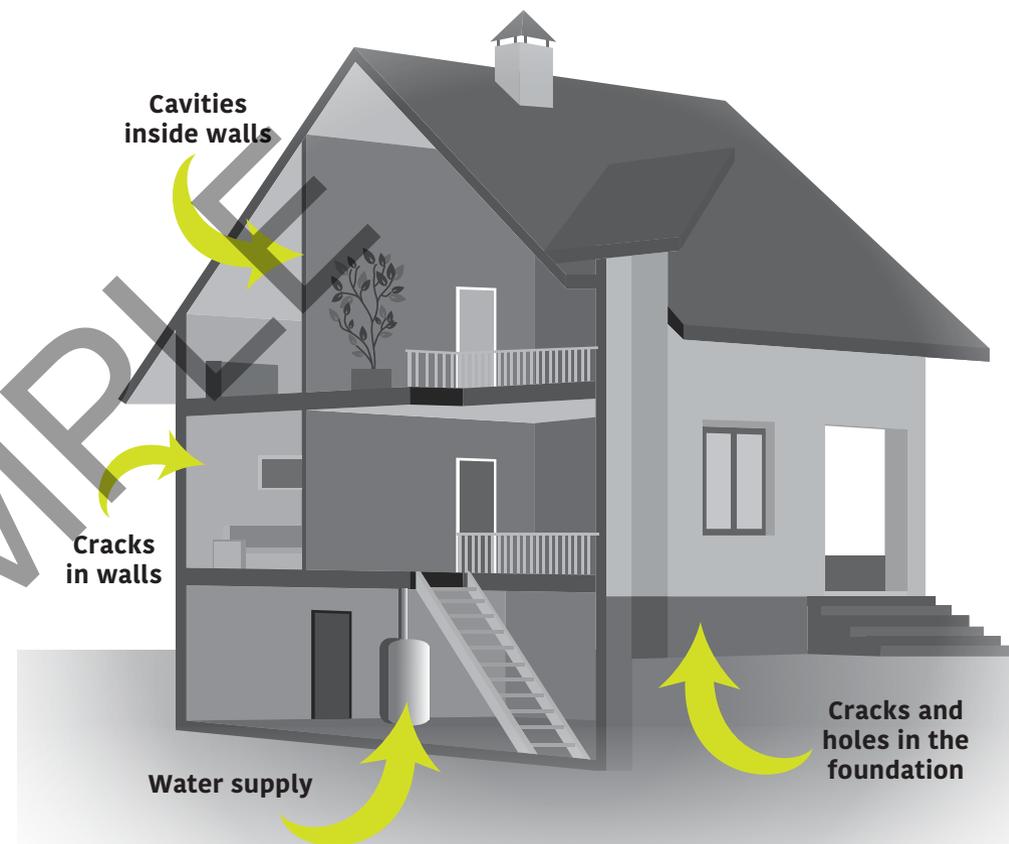
Radon gas and its by-products can seep into your house through cracks or holes in the foundation, and through groundwater and plumbing fixtures. Radon chemicals tend to stick to dust and smoke particles and accumulate in the house where they can readily be inhaled. Fortunately, simple low-tech solutions are available to block radon's path into your home and make sure it stays away for good.

Has radon always been a problem?

Radon is as old as the Earth, but human exposure is often a factor of how homes are built and where they are located, though levels can be high in any type of home. Making matters worse, renovations designed to make homes more energy efficient and less drafty can reduce airflow and potentially increase the concentration of radon in certain types of homes.

How do you know if it's there?

Government studies have identified regions in every state that are naturally high in radon, finding high levels in one of every fifteen homes tested on average nationally. But levels can be high in any home and there's no way to know without testing. Standard tests are available, including kits that you send to a lab for analysis, and professional continuous monitoring devices. Levels can change over time, so it's important to monitor over several days and reassess every two to five years. It's an easy procedure that you can do yourself.



Radon can enter your home in several locations.

What To Do

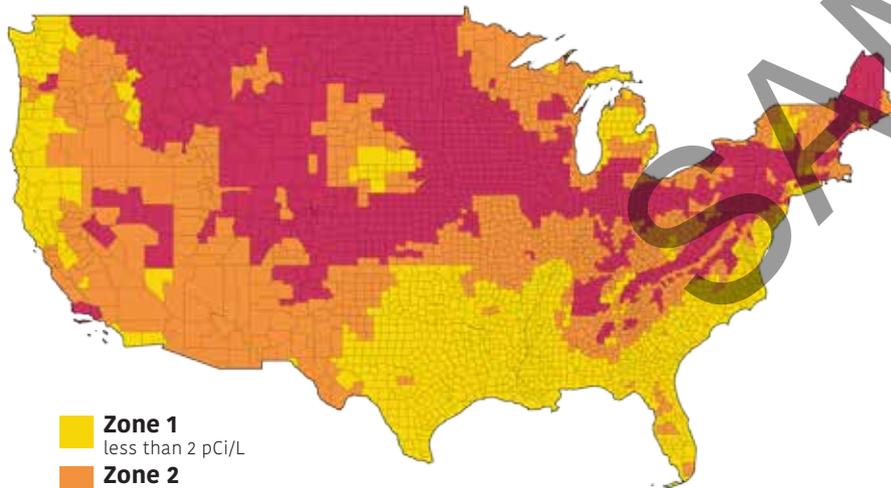
Get your home tested.

You can find easy-to-use test kits at major hardware stores for under \$40. Check with your state and local health and environmental agencies about discounts and incentives on tests. The small devices are designed to be left in the lowest living area of your home for a period of 2 to 90 days, then shipped in an envelope back to the company for analysis. If levels exceed 4 pCi/L, the EPA recommends checking the result with a second longer test before you take action.

Learn about radon levels in your area.

Regions known to have high radon levels have been identified in every state. To find high radon regions in your area, visit www.epa.gov/radon/zonemap. But radon can accumulate to high levels in any home if it is built in a way that traps radon gas, even where the levels found in rock and soil are relatively low.

EPA Map of Radon Zones

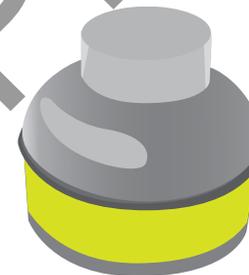


- Zone 1**
less than 2 pCi/L
- Zone 2**
2-4 pCi/L
- Zone 3**
greater than 4 pCi/L

Homes with elevated levels of radon have been found in all three zones. All homes should be tested, regardless of geographic location.

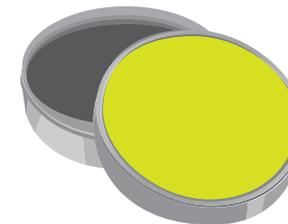
Types of Radon Tests

Electret ion detector



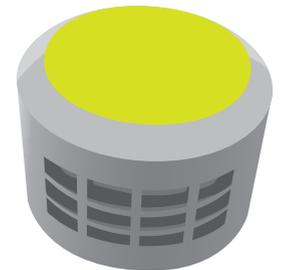
An electrostatically charged disk detects radon ionization.

Charcoal canister



Radon in the air is absorbed by activated charcoal granules.

Alpha track detector



Radon alpha particles cause damage tracks to a piece of special film.

Stop smoking.



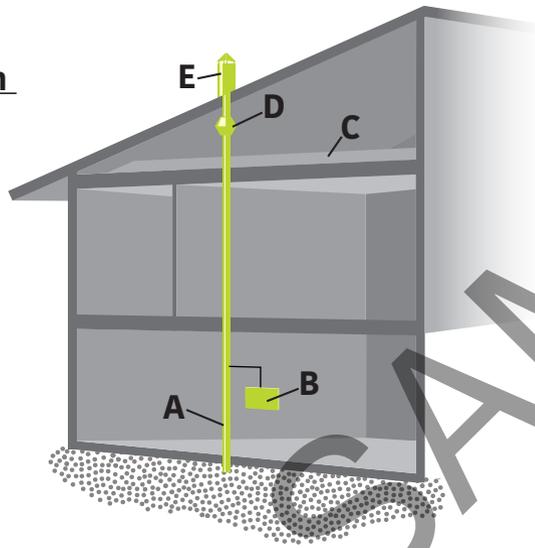
Because cigarette smoke helps trap radon deep in the lungs, the most important thing you can do to lower your risk is stop smoking and stop others from smoking indoors.

Develop a plan and budget.

The simplest proven method to reduce radon involves sealing cracks and gaps in the foundation, and installing a pipe and fan mechanism along the foundation or in a crawl space. Systems like these pull air and radon gas out from under your basement, venting it to the outside, before it accumulates in your home. These systems are widely available and can be installed for a few thousand dollars—in range of other standard home repairs, and a bargain in lung cancer prevention.

Radon Mitigation System

- A Radon exhaust pipe
- B System failure warning device
- C Joist
- D Fan
- E Exhaust



Don't try to solve a radon problem yourself.

Leaving radon repairs to the professionals is usually the most cost-effective approach. Solving the problem yourself by opening windows or installing fans may make radon levels worse or unnecessarily increase your electric and fuel costs. However, if you are a do-it-yourselfer, be sure to consult with a radon specialist before you start your project.



Four of the best reasons to just do it:

1

Lung cancer is a terrible disease

2

It's easy

3

It's affordable

and you may qualify for assistance to make it even cheaper.

4

It can add value to your home

and could prevent surprise headaches when you sell your house.

How To Get Help

How do I get a radon test?

You can buy a radon test kit for under \$40 that measures the average level in your home. For most kits, it's as easy as putting a charcoal canister in the lowest-level living space in your home for a period of 2 to 90 days and then sending it back to the company in an envelope. Because changes in weather or other conditions can affect radon levels, results of quick tests should be checked with a second test before you take action. Test kits are available in most hardware stores, and at discount from your state or local health department or environmental agency. A great time to test is when you move into a new home, and radon testing is a common precondition in purchase or lease agreements.

What do the results mean?

Radon levels are reported as the amount of radioactive energy (picoCuries) detected in a liter of air. The EPA and other health agencies recommend taking action if levels exceeding 4 pCi/L are detected.

How do I find a contractor?

Many states regulate radon contractors and require them to be licensed. To find out what's required in your state, visit www.epa.gov/radon/wherelive.html. If they aren't regulated in your state, hire a contractor that is certified by the National Radon Proficiency Program (www.nrpp.info) or the National Radon Safety Board (www.nrsb.org).

How do I choose a contractor and a radon control system?

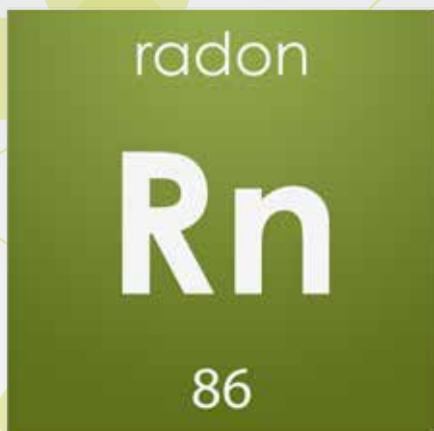
Like with any other repair, it's important to get several estimates and to understand the contract and proposal before choosing a contractor. There are a number of methods to reduce radon: the best prevent radon gas from entering your home in the first place, rather than just dilute it or remove it once it's inside. The contractor's proposal should be based on a full inspection of the home, taking into account the type of construction and appropriate diagnostic tests of airflow and radon levels. The proposal should also estimate the additional energy and maintenance costs that the system will require, as well as guarantee the specified reductions in radon levels you can expect over time.

Where can I get financial help?

Funding programs, including grants and low-interest loans, may be available in your area to support projects to reduce radon in your home. To find out if you qualify for assistance, contact your state environmental or health agency.

What should I do if I am a renter?

There's no reason to live with high radon levels just because you don't own your home. Ask your landlord for the results of any radon tests, or do your own test and share the results with the owner if levels are high. In some states, landlords may be required to take action to reduce radon levels, and local agencies may have programs to support radon remediation in low-income housing units.



Resources

U.S. Environmental Protection Agency
www.epa.gov/radon

National Cancer Institute
[www.cancer.gov/about-cancer/causes-prevention/risk/
substances/radon/radon-fact-sheet](http://www.cancer.gov/about-cancer/causes-prevention/risk/substances/radon/radon-fact-sheet)

U.S. Department of Housing and Urban Development
www.hud.gov/healthyhomes

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