

Radon

Private Wells and Public Water Systems

Radon is a colorless, odorless, and tasteless gas that comes from the natural radioactive breakdown of uranium in the ground. Exposure to radon comes from two main sources: the air in your home and your drinking water.

Following are answers to frequently asked questions regarding radon in groundwater.

What is radon and where does it come from?

Radon gas can dissolve and accumulate in groundwater. When water that contains radon is used for showering, washing dishes, and cooking, radon gas escapes from the water and goes into the air. Some radon also stays in the water. High levels of radon have been found in all 50 states.

Why is radon in groundwater a concern?

Breathing in radon is a health risk. Radon in indoor air can damage lung tissue and increase your chances of developing lung cancer over the course of your lifetime. Most airborne radon enters buildings and homes from the soil beneath the home, not from its release from water. Only about 1 to 2 percent of radon in the air comes from drinking water. Radon remaining in drinking water is also a concern, as drinking such water can increase your chances of developing cancers of various internal organs. Based on a National Academy of Science report, the U.S. Environmental Protection Agency (EPA) estimates that radon in drinking water causes about 168 cancer deaths per year.

How much radon is a harmful amount?

There currently is no federally enforced drinking water standard for radon. EPA has produced a drinking water standard for community water systems of no more than 4000 pCi/L (picocuries per liter). This assumes that your state will develop programs to control radon indoors ("multimedia mitigation" programs). Where states choose not to develop indoor air programs, community water systems will be required to reduce radon levels in water to 300 pCi/L. You might use these limits as your personal "action levels" when you test the water from your well.

How do I test my water for radon?

EPA recommends testing your drinking water for radon. Call the Safe Drinking Water Hotline at (800) 426-4791 for the phone number of your state's laboratory certification office or call the Radon Hotline at (800) SOS-RADON for the number of your state radon office. You also can call your professional groundwater contractor for advice on testing your water for radon.

If a water test is positive for radon, what do you do?

Radon in water can easily be treated by a professional. The most effective ways are by aeration or granular activated carbon (GAC) treatment. Aeration treatment involves spraying water or mixing it with air, then venting the air from the water before use.

It is best to treat water before it enters your home or at the point where it enters. That way all of the water used is treated. Point-of-use devices, such as those installed on a tap or under the sink, treat only a small portion of the water in the home and are not as effective in reducing radon; radioactive materials also can build up on the filters of these devices and become a hazard.

What are other types of radioactive chemicals found in water?

The most common are:

- **Radium-226 and radium-228:** These are naturally occurring and found in groundwater at trace levels.
- **Uranium:** This is naturally occurring, and found in groundwater and surface water.
- **Alpha emitters:** Found in groundwater and surface water, these usually occur naturally but can come from man-made sources.
- **Beta and photo emitters:** These are primarily man-made and associated with nuclear power plants, facilities that use radioactive material for research or manufacturing, or establishments that dispose of radioactive material. They occur primarily in surface water.

Where can I get more information?

For more information on your private water well, contact your local contractor. Also, visit the Web site of the National Ground Water Association, www.ngwa.org, and its site just for well owners, www.wellowner.org.