

Well Water Radon Treatment: What Homeowners Should Know

When people hear the word "radon," most think of a colorless, odorless gas seeping up through basement cracks from the soil below. And that is a very real concern. But there is another route radon can take into your home, one that often surprises homeowners in regions like York County: your well water. If your home draws water from a private well drilled into granite bedrock, the same geology that produces soil gas radon can also dissolve radon into your groundwater. Understanding when and how to pursue well water radon treatment is not just about following regulations. It is about protecting your family's long-term health in a practical, informed way.

Where Radon Comes From in Well Water

Radon is a naturally occurring radioactive gas formed by the decay of uranium, which is present in varying amounts in soil and rock. York County sits atop significant deposits of granite bedrock, and granite tends to contain higher concentrations of uranium. As groundwater moves through fractures in this bedrock, radon dissolves into it. When you run a shower, wash dishes, or do laundry, radon escapes from the water into the air you breathe. The U.S. EPA has identified this as a contributor to indoor radon levels, and the agency estimates that about one in fifteen homes nationwide has elevated radon levels. For homes on private wells in radon-prone areas, the contribution from water can be significant.



It is worth noting that radon in water is primarily a concern for inhalation, not ingestion. When you drink water containing radon, the risk is far lower than the risk from breathing it after it has been released from the water. The Pennsylvania Department of Environmental Protection provides guidance on testing for radon in both air and water. They recommend that well owners test their water separately from their air, because the two problems often require different solutions.

Testing: The First Step Before Any Treatment

You cannot guess at radon levels. The only reliable way to know if you need [well water radon treatment](#) is to test. A radon test kit for water is different from the charcoal canister or continuous radon monitor you might use for air testing. For water, you typically collect a sample at the tap and send it to a certified lab. A short-term radon test might give you a quick snapshot, but a long-term radon test over several months provides a more accurate picture of average exposure. The U.S. EPA recommends that if water tests above 4,000 picocuries per liter (pCi/L), you should take action to reduce radon levels. Above 4,000 pCi/L in water, the contribution to indoor air radon becomes significant enough that treatment is warranted.

I have seen cases where homeowners tested their air, found moderately elevated levels, and assumed the source was soil gas alone. After a water test came back above 10,000 pCi/L, they installed a point-of-entry treatment system and saw their indoor air radon levels drop by more than half. Testing is cheap insurance. The cost of a radon test kit for water is small compared to the peace of mind it provides.



Options for Well Water Radon Treatment

Once you have test results in hand, the next question is what to do about them. There are two main approaches to well water radon treatment: aeration and filtration using granular activated carbon. Each has its strengths and its trade-offs.

Aeration Systems

Well water aeration works by exposing water to air, allowing dissolved radon gas to escape before the water enters your home's plumbing. In a typical aeration system, water is sprayed into a tank or passed through a diffuser while a radon fan vents the released gas safely outdoors. This method is highly effective, often removing 99% or more of radon from water. It

is the preferred approach for high radon concentrations because it does not produce radioactive waste. The radon is simply diluted into the outdoor air, where it poses no hazard.

There are some practical downsides. Aeration systems require more space and more upfront investment than carbon filters. They also need a radon vent pipe to carry the gas outside, and that vent must be properly routed to avoid re-entering the home. A manometer on the vent pipe can help you confirm the system is drawing air correctly. If you already have a radon mitigation system for soil gas, an aeration system can be integrated with the same venting strategy, but it is still a separate piece of equipment.

Granular Activated Carbon Systems

Granular activated carbon tanks work by adsorbing radon as water passes through the carbon bed. These systems are simpler and less expensive to install than aeration systems. They also take up less space. However, there is a catch: as radon decays, it produces short-lived radioactive decay products that accumulate on the carbon. Over time, the carbon becomes radioactive itself, which creates a disposal problem. The carbon media must be handled as low-level radioactive waste when it is replaced. This is not a trivial concern. You need a contractor who understands the regulations around disposal, and you should factor in the cost of replacement media and disposal every few years.

For lower radon levels in water, say below 10,000 pCi/L, granular activated carbon can be a practical choice. For higher levels, aeration is almost always the better option. A knowledgeable radon contractor certification holder can help you weigh these factors based on your specific test results and household water usage.

Point-of-Entry vs. Point-of-Use

Both aeration and carbon filtration are typically installed as point-of-entry treatment systems. That means they treat all the water entering your home, not just water at a single tap. This is the correct approach for radon because the risk comes from radon being released throughout the house during showering, washing, and other activities. A point-of-use filter under the kitchen sink would not protect you from radon released in the shower. For radon, point-of-entry treatment is the only comprehensive solution.



If you are building a new home in York County, consider radon-resistant construction techniques that include provisions for future well water radon treatment. It is much easier to stub out the necessary plumbing and venting during construction than to add them later. The Pennsylvania Department of Environmental Protection offers guidance for new construction, and many builders in the region are familiar with the requirements.

How Well Water Radon Treatment Fits Into a Whole-Home Strategy

Even after you install a system for well water radon treatment, you still need to address radon from soil gas. The two sources are independent, and treating only one may leave you with elevated indoor radon levels. A typical whole-home approach involves a sub-slab

depressurization system for soil gas. That system uses a radon vent pipe and a radon fan to pull radon from beneath the foundation and exhaust it above the roofline. The radon mitigation system for water is a separate component, but both systems can be designed to work together without interfering with each other.

After installation, follow-up testing is essential. A short-term radon test after the system is operational will confirm that the system is performing as expected. Many homeowners then switch to a continuous radon monitor for ongoing peace of mind. A manometer on the sub-slab system will tell you if the fan is running and the pipe is under negative pressure. If you see the manometer reading drop, it might indicate a leak in the system or a failing radon fan that needs replacement.

Sealant applied to cracks and gaps in the basement or slab floor is a complementary measure that can improve the performance of both systems. But sealant alone is not a substitute for active depressurization or water treatment. It is a supporting player, not the star.

Working With a Qualified Professional

Radon mitigation is not a DIY project. The stakes are too high, and the systems require proper design, installation, and testing to be effective. In Pennsylvania, radon contractor certification is offered by the Pennsylvania Department of Environmental Protection, though certification is not mandatory in all cases. Still, hiring a certified contractor who carries liability insurance and follows industry standards is the smart move. A good contractor will walk you through the test results, explain the options, and provide a written estimate that includes post-installation testing.



In York County, where granite bedrock is common, many homeowners face this exact combination of soil gas radon and well water radon. The good news is that both problems have well-established, proven solutions. The key is to test correctly, choose the right treatment for your water chemistry and radon level, and maintain the system over time. Well water radon treatment is not something you install and forget. The radon fan may need replacement after several years. The granular activated carbon media, if that is your choice, will eventually need changing. But the effort is a small price to pay for reducing your family's exposure to a known carcinogen.

Final Thoughts

If you own a private well in a radon-prone area, testing your water should be on your to-do list this year. It is easy to overlook because radon in water is invisible and odorless, and the symptoms of exposure take years to appear. But the science is clear: breathing radon increases your risk of lung cancer. The U.S. EPA estimates radon causes over 20,000 lung cancer deaths annually in the U.S. Reducing that risk starts with knowledge. A simple radon test kit for water can tell you whether you need treatment. If you do, the options are well-understood and effective. Whether you choose well water aeration or granular activated carbon, point-of-entry treatment is the way to go. And if you already have a sub-slab depressurization system for soil gas, adding well water radon treatment completes the picture. Your home can be safer, and your family can breathe easier.