

Why a Radon Reduction System Matters for West St. Louis County Homes

Understanding the Risk Beneath Your Home

Living in West St. Louis County, with its wooded lots and varied geology, comes with a quiet concern that many homeowners don't think about until they test for it. Radon is a naturally occurring radioactive gas that forms when uranium in soil and rock breaks down. It moves up through the ground and can seep into your home through cracks in the foundation, gaps around pipes, or sump openings. The EPA has identified radon as the second leading cause of lung cancer after smoking, and the only way to know your level is to test.

I've spent years working with homes in Chesterfield, Ballwin, Wildwood, and Town and Country, and I can tell you that no house is automatically safe. I've seen a tight, well-sealed home in Wildwood test at over 8 picocuries per liter, while an older home in Chesterfield with a dirt crawlspace tested below the EPA action level of 4. The variables are many, and the solution is not guesswork. It's engineering.

What a Radon Reduction System Does

A [radon reduction system](#) is not a single device you plug in and forget. It is a tailored setup, usually involving sub-slab depressurization, that actively pulls soil gas from beneath your home and vents it safely above the roofline. The core components include a radon sump, a small cavity created in the gravel or soil under the concrete slab, connected to a radon vent pipe that runs up through the house and out the roof. A fan system installed in the attic or outside creates a continuous vacuum that draws the gas from under the slab and expels it into the open air where it quickly dilutes.

For homes with a crawlspace, the approach shifts to crawlspace mitigation. Instead of pulling from under a slab, we seal the crawlspace floor with a heavy-duty vapor barrier and create a suction point beneath it, again using a fan and vent pipe to remove the radon. Both methods rely on the same principle: stop the gas from entering your living space by reversing the pressure that pushes it inside.

Why Professional Installation Matters

Installing a radon reduction system is not a weekend project. The sizing of the fan, the placement of the radon sump, and the route of the vent pipe all require careful calculation. A fan that is too weak won't create enough suction. One that is too powerful can pull excessive moisture or even soil particles, leading to premature wear. A licensed contractor with

experience in radon mitigation understands these trade-offs. They also know the local soil conditions in West St. Louis County, the clay content, the water table, the typical foundation types, which affect how a system should be designed.

I've seen homeowners attempt a DIY approach using a bathroom exhaust fan and a piece of PVC pipe. In one case in Ballwin, the fan burned out within a year because it wasn't rated for continuous outdoor use. The radon levels never dropped below 6. After we installed a proper system with a correctly sized fan and a sealed radon sump, the post-mitigation test showed 1.2. That's the difference between living with a known risk and sleeping easy.

Testing First, Mitigation Second

Before any work begins, radon testing establishes the baseline. A short-term test, usually 48 hours to 90 days with a radon detector placed in the lowest lived-in level of the home, gives a snapshot. Long-term tests, which last more than 90 days, give a better average because radon levels fluctuate with weather and season. I always recommend a long-term test after mitigation to confirm the system is working. A post-mitigation test is the only way to prove that the radon reduction system is performing as intended.

In my work with Air Sense Environmental, we follow EPA guidelines for testing location, duration, and device placement. The detector should be at least 20 inches above the floor, away from drafts, heat sources, and exterior walls. If the test shows levels at or above 4, mitigation is the next step. And because every home is different, the system design must account for the specific radon entry points found during the inspection.

Common Radon Entry Points and How a System Addresses Them

Radon enters through any opening between your home and the soil. The most common radon entry points include:

- Cracks in concrete slabs or foundation walls
- Floor-to-wall joints and control joints
- Openings around sump pumps or floor drains
- Gaps around utility penetrations like water pipes and wiring
- Crawlspace access doors or unsealed crawlspace floors

A properly designed radon reduction system does not rely on sealing every single crack, though sealing helps. Instead, it creates a pressure barrier. By pulling the soil gas from under the slab or crawlspace, the system ensures that even if there are small gaps, the gas is drawn downward and outward instead of upward into the home. This is why sub-slab depressurization is so effective: it works with the house's natural stack effect, not against it.

What to Look for in a System

When evaluating a radon reduction system, pay attention to the details. The fan should be UL-listed for radon use and rated for continuous operation. The radon vent pipe should be at least 3 inches in diameter for most homes, and it must extend at least 10 feet above ground level and 2 feet above any roof edge, window, or opening. A manometer, a simple U-tube gauge, should be installed on the vent pipe so you can visually confirm the system is maintaining vacuum. If the manometer shows zero, the fan may have failed or the system has a leak.

I also recommend asking about the fan's location. In cold climates, fans installed in unconditioned attics can freeze up if condensation collects and freezes. In West St. Louis County, winters can be cold enough that an exterior-mounted fan should be rated for low temperatures. A good licensed contractor will factor in these details during the design phase.

Maintenance and Long-Term Performance

Once installed, a radon reduction system requires very little maintenance. The fan runs continuously, and the only moving part is the fan motor itself. I suggest checking the manometer monthly, especially after severe weather. If the reading changes, call your mitigation contractor for a check. The system should also be re-tested every two years or after any major renovation that affects the foundation or the slab.

Some homeowners worry about energy loss from the vent pipe. In practice, the pipe is sealed and insulated where it passes through conditioned space, so the energy impact is minimal, often less than a typical bathroom exhaust fan. The peace of mind is substantial.

Final Thoughts on Protecting Your Home

Radon is a solvable problem. It doesn't require moving or major structural changes. It requires the right diagnosis and the right equipment. A well-designed radon reduction system, installed by a licensed contractor who knows the local geology and building styles of Chesterfield, Ballwin, Wildwood, and Town and Country, will protect your family for decades. The cost is modest compared to the potential health impact, and the work is clean and unobtrusive.

If you haven't tested your home yet, start there. If your test came back high, don't delay. Radon mitigation is a mature field with proven methods. The only bad decision is ignoring the data.