

Why Radon in New Construction Demands Attention Before You Move In

When I bought my first house back in the early 2000s, the home inspection covered termites, roof condition, and wiring. No one mentioned radon. That oversight haunts me now, because I know what I didn't know then: radon is a silent hazard that can affect any home, even a brand new one. Many people assume new construction means a clean slate, but radon in new construction is a real problem that builders and homeowners need to address before the foundation is poured.

Radon comes from the natural decay of uranium in soil and rock. It moves up through the ground and can enter a house through cracks in the slab, gaps around pipes, or porous concrete. A new home with a tight building envelope might actually trap radon more effectively than an older drafty one. That is why radon resistant construction matters from day one.



How Radon Gets Into a New Home

The primary mechanism is soil gas. Beneath a new house, the ground contains varying levels of uranium depending on local geology. In St. Louis, for instance, the bedrock and glacial deposits can produce moderate to high radon potential. When you build on that land, you create a pressure difference between the soil and the indoors. Warm air rising inside the house pulls soil gas through any opening in the foundation. A gravel base under the slab is standard in modern construction, and that layer actually provides a pathway for radon to travel laterally before entering the home.

A vapor barrier is typically installed over the gravel to block moisture, but it also helps slow radon movement. However, a vapor barrier alone is not enough. Sealing cracks around utility entries and along the slab perimeter reduces entry points, but even the best seal can fail over time as the house settles.

Radon Resistant Construction: What Builders Should Do

Building codes in many areas now require radon resistant construction techniques, especially in zones designated by the EPA as having high radon potential. The key elements include a layer of gravel or stone beneath the slab, a vapor barrier, sealing all openings, and installing a passive system. A passive system is basically a vertical pipe that runs from the gravel layer up through the roof. It relies on natural air pressure differences to draw soil gas up and out of the house.

But here is the catch: a passive system may not reduce radon enough in all homes. The National Radon Program recommends testing after occupancy to see if the passive system works. If test results show radon levels at or above the EPA action level of 4 picocuries per liter, the passive system needs to be upgraded to an active system. An active system adds a radon fan to the PVC piping, which actively pulls soil gas from beneath the slab and vents it above the roof. This sub-slab depressurization method is the most reliable way to lower indoor radon concentrations.

I have seen homeowners who skipped the post-mitigation test assume everything is fine because the builder installed a passive system. Then, months later, they do a radon test and find levels at 8 pCi/L. The fix is possible, but it costs more to retrofit than to install an active system during construction. That is why I always tell people to insist on a radon testing plan as part of the building process.

The Role of Radon Testing in New Construction

Radon testing is not something you do once and forget. In a new home, the first test should happen after you move in but before you settle into a routine. The EPA suggests a short-term test of two to seven days in the lowest livable level. If you are building a house with a

basement, that is where you place the detector. If the house is slab-on-grade, test on the first floor.

Testing is cheap and easy. You can buy a charcoal canister kit at a hardware store or hire a professional. I recommend using a certified tester for new construction because they understand the nuances of fresh concrete off-gassing and temporary ventilation patterns. A home inspection for radon should be separate from the general home inspection, because radon requires specialized measurement.

If the initial test comes back high, you need a radon mitigation system. That may mean converting a passive pipe to an active one by installing a radon fan in the attic or outside. The fan creates suction under the slab, and the manometer on the pipe shows you that the system is running properly. A manometer is a simple U-tube device that indicates pressure difference. If the fluid levels are even, your system is not working.

Radon in New Construction: A Missed Opportunity

Here is where I see a gap in the industry. Many builders treat radon resistant construction as a checkbox item. They install the passive pipe, seal the cracks, put down the vapor barrier, and move on. But they rarely test the effectiveness of that system. The building code may require the pipe to be installed, but it does not require the pipe to actually reduce radon to safe levels. That is a problem.



I remember a project in St. Louis where a family built their dream home with a passive system. They did a radon test six months later and got 6.2 pCi/L. The builder said the system was up to

code. The family called Air Sense Environmental, and the technician found that the passive pipe had no suction because the roof cap was poorly designed and the natural draft was insufficient. They added an in-line radon fan, and the post-mitigation test showed 1.1 pCi/L. That small upgrade made the house safe.

That story illustrates why [radon in new construction](#) should include a post-mitigation test as a standard step. You would not assume a new roof is watertight without testing it in a rainstorm. Why assume a radon system works without measuring it?

What Homeowners Can Do

If you are building a house, talk to your builder about radon early. Ask for a passive system that can be easily upgraded. Make sure the PVC piping is labeled and accessible in the attic. Request that a manometer be installed so you can monitor the system later. Most importantly, schedule a radon test within 90 days of moving in.

If you already live in a new home and have not tested for radon, do it this week. The National Radon Program estimates that nearly one in fifteen homes in the U.S. has elevated radon levels. New construction does not exempt you from that statistic. In fact, because new homes are more airtight, they can concentrate radon more than older homes that leak air.

One practical detail: when you test, close all windows and doors to the outside for at least 12 hours before the test starts. That gives you a realistic reading of what your family breathes on a normal winter day. Test in the lowest level that is used regularly, like a basement playroom or a ground-floor bedroom.

The Bottom Line on Radon in New Construction

Building a new home gives you a rare chance to install radon protection at the lowest possible cost. A passive system costs about \$300 to \$500 during construction. Upgrading to an active system later can run \$1,500 to \$2,500. That is a big difference for a relatively simple addition. But even with a passive system in place, you must test to confirm safety.

Radon testing and radon mitigation system installation are not optional extras. They are essential steps in protecting your family from the second leading cause of lung cancer after smoking. The EPA has clear guidelines, and the National Radon Program offers resources for finding certified professionals. In St. Louis, companies like Air Sense Environmental specialize in this work, but the responsibility starts with you, the homeowner.

Do not assume new means safe. Test, verify, and if needed, install an active system. That piece of mind is worth the effort.