

Why Sub-Slab Depressurization in York Homes Is the Gold Standard for Radon Mitigation

If you live in York County and you have tested your home for radon, you already know the problem is real. Radon gas seeps up from the soil through cracks in the foundation, sump pits, and gaps around pipes. The EPA estimates that nearly one in fifteen homes in the United States has elevated radon levels, but here in Pennsylvania the numbers are worse. York County sits on geology that produces a lot of soil gas, and winter heating cycles can pull that gas inside. I have spent years working with homeowners who tried sealing cracks, running fans in the basement, or just opening windows. None of those methods work reliably. The only approach that consistently brings radon levels down is a properly installed sub-slab depressurization system.

What Sub-Slab Depressurization Actually Does

The principle is simple but elegant. Instead of trying to block radon from entering the house, you create a low-pressure zone beneath the concrete slab. A vent pipe runs from a pit or a layer of gravel under the slab up through the house to the roof. A radon fan mounted in the attic or outside pulls soil gas from under the slab and vents it above the roofline, where it disperses harmlessly. This method is often called active soil depressurization, and it is the technique the EPA recommends for most homes. What makes it so effective is that it reverses the pressure difference that normally draws radon into the living space. Instead of the house sucking air from the ground, the system actively sucks the ground air away before it can enter.



For a home in York, [sub-slab depressurization York](#) contractors have been installing these systems for decades, and the local knowledge matters. Soil composition, water table depth, and foundation type all affect how the system should be designed. A house on a slab with a thick vapor barrier needs a different approach than one built directly on gravel. A home with a sump pit can sometimes use that pit as the suction point. An experienced installer will test the soil first, map the slab, and decide where to place the suction pit for the best draw. That kind of judgment comes from working in the same area for years.

Testing Before and After Is Not Optional

Radon testing is the first step. You cannot know whether you need mitigation until you run a test, and you cannot know if the mitigation worked without follow-up testing. The EPA recommends a short-term test of two to seven days in the lowest livable level of the home. If the result is 4 picocuries per liter or higher, mitigation is strongly recommended. But even a result of 2 or 3 might be worth addressing if you spend a lot of time in the basement. The goal of radon abatement is to bring the level as low as practical, ideally below 2 pCi/L.



After the sub-slab system is installed, you wait a few days and test again. I have seen systems drop radon levels from 12 pCi/L down to 1.2 pCi/L on the first test. But I have also seen systems that were installed poorly and barely made a dent. That is why a reputable York radon mitigation service will always include follow-up testing in the scope of work. They want to prove the system works, not just walk away after the fan is running.

The Role of the Fan and the Manometer

A radon fan is a specialized piece of equipment. It is not a bathroom exhaust fan or a furnace blower. Radon fans are designed to run continuously for years, handle moisture and dust, and move air at low static pressure. They sit in the vent pipe line, usually in the attic or outside the house. A manometer is a small gauge that tells you the system is still pulling suction. If the

manometer reading drops, it could mean the fan is failing, the pipe is blocked, or the suction pit has flooded. Checking the manometer once a month is a good habit. If the reading changes, call for a fan replacement before radon levels climb back up.

Fan replacement is a common service in York County because the fans do wear out. A good fan might last five to seven years, but cheaper units can fail in three. When the fan stops, the system becomes a passive vent, and passive vents do not work well in most homes. The pressure difference flips back, and radon levels rise again. Replacing a radon fan is not a DIY job unless you really know what you are doing. The wiring, the pipe connections, and the weatherproofing all need to be correct. A professional will also check the manometer, test the suction, and verify that the system is pulling from under the whole slab, not just a small area.

Common Mistakes I See in York Homes

- Sealing cracks and calling it done. Caulk and epoxy can reduce radon entry by maybe ten to twenty percent, but they do not stop the pressure-driven flow through the slab. Sealing cracks is a good secondary measure, but it is not a mitigation strategy.
- Installing a sub-slab system without a manometer. Without a gauge, you have no idea if the system is working. I have walked into homes where the fan was running but the pipe was disconnected from the pit. The fan noise fooled the homeowner into thinking everything was fine.
- Putting the fan in the living space. A radon fan must be outside the conditioned envelope of the house. If it is in the basement or a crawl space, it can leak radon back into the home. The fan should be in the attic, on the roof, or on an exterior wall.
- Skipping follow-up testing. You cannot assume the system is working without a test. Radon levels vary with weather and season. A test right after installation might look good, but a retest six months later can reveal a problem if the system was not designed for seasonal water table changes.

How Sub-Slab Depressurization Compares to Other Methods

There are other ways to deal with radon. You can seal the slab, install a block-wall ventilation system, or pressurize the basement with a fan that blows outside air inside. But sub-slab depressurization is the most reliable for York County homes. Block-wall systems work only if the walls are hollow and the cavities are connected. Basement pressurization can work in some houses, but it is expensive to run and can cause moisture problems in the summer. Sub-slab depressurization York professionals have refined this method over decades because it works in the clay soils, shale, and limestone that dominate the region.



The cost of a sub-slab system in York County typically ranges from eight hundred to fifteen hundred dollars, depending on the complexity of the installation. That might sound like a lot, but compare it to the health risk. Radon is the second leading cause of lung cancer in the United States, according to the EPA. A one-time investment in radon mitigation is cheap insurance. And if you sell your home, a radon mitigation system with a recorded test result can be a selling point. Buyers in Pennsylvania are increasingly aware of radon and will ask for a test before closing.

Maintenance and Long-Term Performance

A sub-slab system requires very little maintenance. Check the manometer once a month. Listen for changes in fan noise. Make sure the vent pipe is not blocked by snow, leaves, or bird nests. If the fan fails, replace it quickly. Most systems run for years without trouble, but neglect is the biggest risk. I have seen a system that was installed in 1998 still running on its original fan, and I have seen a system that failed after two years because the fan was a cheap model that could not handle the humidity. Pay the extra hundred dollars for a good fan. It will save you money in the long run.

One thing homeowners often ask me is whether the system will make their basement colder or increase their heating bill. The answer is yes, a little. The radon fan pulls conditioned air from the house through any gaps in the slab, which can slightly increase heating costs in the winter. But the effect is small, usually ten to twenty dollars a year. Sealing cracks around the slab edge and around pipes can reduce that loss. A well-sealed slab combined with sub-slab depressurization York is the best combination for both radon control and energy efficiency.

Final Thoughts on Choosing a Contractor

Radon mitigation is not a regulated trade in Pennsylvania, which means anyone can call themselves a radon professional. Look for someone who is certified by the National Radon Proficiency Program or the National Radon Safety Board. Ask for references and for proof that they carry liability insurance. A good contractor will walk you through the design, explain where the pipe will run, and show you how the manometer works. They will also offer a warranty on the fan and on the workmanship. Do not hire someone who just wants to throw a fan in the attic and leave. The system has to be designed for your specific house, and that takes time and experience.



If you have tested your home and found radon levels above 4 pCi/L, do not wait. Radon exposure is cumulative, and every year you delay adds to your risk. Sub-slab depressurization is a proven, durable solution that works in York County homes. Get it done right, test afterward, and check the manometer now and then. That is all it takes to keep your indoor air safe from radon gas.