

Smart Strategies for Radon Reduction in Older Homes

If you own an older home in York County, Pennsylvania, you already know that charm comes with quirks. Thick stone foundations, dirt-floor crawl spaces, and original windows all add character. But those same features can create hidden problems with indoor air quality, especially when it comes to radon. I have spent years testing and mitigating radon in homes built before 1950, and the truth is that radon reduction in older homes requires a different approach than what works in a new construction subdivision.

The main reason is simple. Older homes were not built with a vapor barrier under the slab. Many do not even have a continuous concrete slab. Instead, you might find a stone foundation with a dirt crawl space, or a basement floor that was poured in sections. These gaps and openings let soil gases, including radon, flow freely into the living space. A mitigation strategy that relies on a sealed sub-slab system will fail if the slab is cracked or missing entirely. That is why I always start a radon reduction in older homes project with a thorough site assessment, not just a test result.



Understanding the Radon Problem in Older Houses

Radon is a radioactive gas that comes from the natural decay of uranium in soil and rock. In York County, the geology includes a lot of limestone and shale, which can produce elevated radon levels. The EPA has set an Action Level of 4 picocuries per liter of air. Above that, they recommend fixing your home. But I have seen levels above 100 pCi/L in some old farmhouses here. That is a serious health risk.

The tricky part is that radon enters through foundation cracks, gaps around utility pipes, and sump pump openings. In an older home, those entry points are numerous and often hidden behind old paneling or under a dirt floor. A standard radon test kit, either a charcoal canister or a continuous radon monitor, can tell you the average level over a few days. But it will not tell you where the gas is coming from. That takes a trained eye.

Why Sub-Slab Depressurization Can Be Tricky

The most common radon mitigation system for newer homes is sub-slab depressurization. A pipe is inserted through the slab into the gravel below, and a fan pulls soil gases out from under the house before they can get inside. This works great when the slab is intact and sealed. But in an older home, the slab may be absent or full of cracks. Trying to create suction under a slab that is not continuous is like trying to vacuum a room with the door open.



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In those cases, I often turn to soil suction through a crawl space. If the home has a dirt crawl space, we can lay a heavy plastic vapor barrier over the dirt, seal the edges to the foundation walls, and then pull air from under the plastic using a pipe and fan. This is essentially a giant radon mitigation system that covers the entire crawl space floor. It works well, but it requires careful sealing around piers and plumbing penetrations. Epoxy sealant is useful for smaller cracks in a concrete floor, but for a dirt crawl space, you need a thick polyethylene sheet and a lot of tape.

Fan Replacement and System Maintenance

Once a mitigation system is installed, it needs to keep running. Fans wear out. I have replaced plenty of fans that were ten or fifteen years old and had simply seized up. A U-tube manometer mounted on the pipe tells you if the fan is pulling the right amount of vacuum. If the reading drops, you know something is wrong, maybe a fan failure or a leak in the piping. Regular fan replacement is part of owning a mitigation system, just like changing the filter on your furnace.

One homeowner I worked with near the Susquehanna River had a system that had been installed twenty years earlier. The fan was dead, and the pipe had been knocked loose by a lawnmower. The radon levels in their basement had crept back up to 12 pCi/L. They had no idea, because they had not tested in years. A simple radon test kit would have caught it. I replaced the fan, reconnected the pipe, and sealed the joint with epoxy sealant. Within a day, their levels dropped below 2 pCi/L.

Passive Ventilation and Radon Resistant Construction

Some older homes have tried passive ventilation as a fix. The idea is to open basement windows or install vents in the foundation to let radon drift out. In my experience, this rarely works well enough. Passive ventilation depends on wind and temperature differences, which are unreliable. In the summer, when the house is closed up and the air conditioner is running, radon levels often spike. Passive systems also do nothing to stop the gas from entering in the first place.



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Radon resistant construction techniques, like sealing the slab with epoxy and installing a passive stack pipe during a renovation, are great for new builds. But retrofitting an existing older home requires a different set of tools. You have to work with what is there. That might mean installing a sump pump pit and using it as a suction point, or running piping through an old chimney chase.

Testing and Follow-Up Testing

I always tell homeowners that testing is not a one-time event. Radon levels can change with the seasons, with weather, and with changes to the house. A charcoal canister test gives you a snapshot, usually over two to seven days. A continuous radon monitor gives you hour-by-hour readings and can show you patterns. For example, you might see that levels are highest in the early morning when the house is closed up and the ground is cold.

After installing a radon mitigation system, I always recommend follow-up testing within thirty days. That confirms the system is working. Then I suggest testing again every two years, or after any major renovation. If you add a new foundation crack or change the grade around the house, radon pathways can shift. I have seen a system that worked perfectly for years suddenly fail after a homeowner added a french drain that cut through the sub-slab piping.

Practical Steps for Homeowners in York County

If you live in an older home in York County and are concerned about radon, here are a few practical steps based on what I have seen work and not work:



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- Start with a radon test kit. Use a charcoal canister for a low-cost initial reading, or rent a continuous radon monitor for more detail. Test in the lowest livable level of the home.
- If levels are above the EPA Action Level, do not try to seal cracks with caulk alone. That never works for long. You need a mitigation system that actively pulls soil gases away from the house.
- Look at your foundation. If you have a dirt crawl space, you will likely need a crawl space vapor barrier and soil suction system. If you have a concrete slab, sub-slab depressurization may be possible, but only if the slab is in good shape.
- Check your sump pump. In many older homes, the sump pit is a direct opening to the soil. Sealing the pit and using it as a suction point can be an effective part of a mitigation plan.
- Monitor your system. A U-tube manometer on the pipe will tell you if the fan is working. If the reading drops, call for fan replacement or a system inspection.

The Bottom Line on Older Home Radon Mitigation

[Radon reduction in older homes](#) is not a one-size-fits-all process. It takes a careful look at the construction, the soil, and the existing openings. But it is absolutely doable. I have seen homes built in the 1800s with dirt floors drop from 50 pCi/L to below 2 pCi/L with the right system. The key is to treat the house as a system and address the specific entry points, not just the symptom.

Indoor air quality matters for your family's health. Radon is the second leading cause of lung cancer in the United States, according to the EPA. That is a serious health risk, but it is one you can manage. Whether you live in a stone farmhouse in the middle of York County or a brick rowhome in the city, the principles are the same. Test, mitigate, and test again. And if your home has a crawl space or a damaged slab, do not assume that radon reduction in older homes is impossible. It may just take a little more creativity and the right combination of tools like soil suction, vapor barriers, and a reliable fan.