

What a Radon Vent Pipe Does and Why It Matters for Your Home

When a radon mitigation system is installed correctly, the most visible part is often the radon vent pipe. This pipe runs from beneath the foundation up to a point above the roofline, safely releasing soil gas into the outside air. Without it, the system would have no way to move radon out of the house. Understanding how this pipe works, where it goes, and what can go wrong helps homeowners keep their mitigation system effective for years.

Where the Radon Vent Pipe Fits in a Mitigation System

A typical radon mitigation system for a house with a basement slab works through sub-slab depressurization. A fan assembly creates negative pressure under the concrete floor, drawing soil gas toward a suction pit or sump. That gas then travels up through a length of PVC pipe, usually three or four inches in diameter, and exits above the roof. The radon vent pipe is the conduit that makes this whole process possible. If the pipe is blocked, damaged, or poorly sealed, the system loses its ability to pull gas from under the slab.



In St. Louis, where bedrock and soil conditions can vary block by block, the placement of the vent pipe matters a lot. Some homes have crawl spaces instead of full basements, and the pipe route might need to go through an exterior wall before heading up the side of the house. Other homes have finished basements, so the pipe runs inside a closet or utility room before penetrating the roof. Every installation is a little different, but the principle stays the same: the [radon vent pipe](#) must create a continuous, airtight path from the soil beneath the house to the open air above it.

Materials and Construction

Most vent pipes use rigid PVC pipe because it is durable, smooth-walled, and resists corrosion from the moist soil gas. The pipe connects to the fan assembly somewhere along its run, often in an attic or an unfinished part of the basement. The fan itself is usually a small, in-line unit rated for continuous operation. It creates enough suction to pull gas through the suction pit and up the pipe, but not so much that it disturbs the foundation or creates drafts inside the living space.

Where the pipe passes through the basement slab or an exterior wall, pipe flashing seals the gap and prevents soil gas from leaking back into the house. A proper seal here is critical. Even a tiny crack around the pipe can let radon reenter the home, defeating the purpose of the whole system. The flashing also keeps out insects and moisture that might otherwise travel along the pipe into the structure.

Signs Your Vent Pipe Is Working Right

After a system is installed, a post-mitigation verification should include a radon test and a visual check of the pipe and fan. One simple indicator is the manometer, sometimes called a vacuum gauge, that shows the pressure difference between the inside of the pipe and the surrounding air. A properly running system will show a steady reading on the manometer, usually between 0.5 and 1.5 inches of water column. If the reading drops to zero, the fan may have failed, or the pipe may be blocked.

Another thing to listen for is the fan itself. Most fans are quiet, but they do make a low hum. If that sound changes or stops entirely, it is worth checking the system. Some homeowners also notice that their radon detector readings start creeping up after a few months, which can indicate a problem with the vent pipe or the fan assembly. A quick comparison with the original post-mitigation test numbers can tell you whether something has changed.

Common Problems and Repairs

Over time, a radon vent pipe can develop issues. Here are a few that I have seen in the field:

- **Ice or debris blocking the outlet.** In cold climates, frost can build up inside the pipe where it exits the roof. A simple screen or a larger pipe diameter can help, but sometimes the blockage is enough to stop airflow. Snow or leaves can also cover the outlet.
- **Damaged pipe flashing.** If the seal around the pipe breaks, soil gas can leak back into the house. This often happens after roof work or when someone bumps the pipe during maintenance.
- **Fan failure.** The fan assembly is the most mechanically stressed part of the system. It can wear out after several years, especially if it runs continuously. Replacing it restores the vacuum needed for sub-slab depressurization.
- **Pipe separation.** Joints in the PVC pipe can come apart if they were not properly glued or if the pipe is under mechanical stress. A separated joint lets the system lose vacuum and radon can escape into the attic or crawl space.

Most of these problems are fixable without replacing the whole system. A qualified contractor like Air Sense Environmental can inspect the pipe and fan, reseal joints, replace the flashing, or swap out the fan assembly as needed. The cost of a repair is usually much less than the cost of ignoring the problem and letting radon levels rise.



Why the Pipe Must Go Above the Roofline

You might wonder why the vent pipe cannot just stop at the eave or the side of the house. The reason is dilution. Radon gas is heavier than air, so if the pipe outlet is too low, the gas can pool near windows, doors, or air intakes and be drawn back inside. By extending the pipe at least a foot above the roofline, the gas disperses into the open air where it cannot reenter the home. This is a standard recommendation from the EPA and most building codes. A damper is sometimes installed in the pipe to balance airflow, but the outlet height remains the same regardless.

Testing and Verification

After any repair or modification to a radon vent pipe, it is a good idea to run a follow-up radon test. The test should be a long-term detector placed in the lowest livable area of the house, left in place for at least 90 days. Short-term tests can give a quick snapshot, but long-term results are more reliable for showing whether the system is working consistently. Post-mitigation verification is not just a box to check; it is the only way to confirm that the pipe, fan, and seals are all doing their job.

In St. Louis, where radon levels can vary widely even between neighboring houses, a single test after installation might not tell the whole story. Seasonal changes in soil moisture and temperature affect how much radon is drawn into the suction pit. A system that tests fine in July might show higher readings in January if the pipe or fan is not performing well in cold weather. That is why many contractors recommend testing every two years, even if the system seems fine.

Maintenance Tips for Homeowners

You do not need to be a radon expert to keep your system running. A few simple checks can catch problems early:

- Look at the manometer or vacuum gauge once a month. If the reading changes significantly, call a professional.
- Check the pipe flashing for cracks or gaps, especially after roof work or heavy storms.
- Listen to the fan. If it makes unusual noises or stops running, get it checked.
- Clear snow, leaves, or bird nests from the pipe outlet after storms.
- Run a radon detector in the basement or lowest floor every year to track levels.

These steps take only a few minutes but can save you from a failed system and higher radon exposure. The radon vent pipe is a simple piece of infrastructure, but it is the backbone of sub-slab depressurization. Treat it with the same attention you would give your furnace or water heater, and it will keep protecting your family for years.

I have seen too many homes where a perfectly good mitigation system stopped working because nobody noticed the pipe had separated or the fan had burned out. A little awareness goes a long way. If you live in St. Louis and are unsure about your system, a company like Air Sense Environmental can perform a full inspection and recommend any needed repairs. But even without professional help, a quick visual check each season can catch the obvious issues before they turn into big problems.