

Understanding Radon in Basement: Why Metro East Illinois Homes Need Testing

Why the Basement Matters Most for Radon Exposure

If you own a home in Metro East Illinois, the basement is the first place to think about when it comes to indoor air quality. Radon gas enters buildings through the ground, and the basement slab is often the primary entry point. The reason is simple: radon comes from uranium decay in soil and rock, and it moves upward through porous concrete, cracks in the foundation, and gaps around pipes. In Metro East Illinois, which includes communities like Belleville, Edwardsville, O'Fallon IL, and Collinsville, the geology creates conditions that can lead to elevated indoor radon levels. The US Environmental Protection Agency has classified much of this region as Zone 1, meaning predicted average indoor radon levels are higher than the action level of 4 picocuries per liter of air. That makes radon in basement a real concern for local homeowners.

I have worked with many families in this area who assumed their home was safe because it was newer or because they had a sump pump system for groundwater. While a sump pump system handles water, it does nothing to stop radon gas. In fact, the same opening that drains water can act as a highway for radon to enter the living space. The only way to know what you are dealing with is to test. A radon test kit placed in the lowest lived-in level of the home - usually the basement - gives you a starting point. But not all tests are the same, and the timing matters more than most people realize.

How Radon Moves and Where It Collects

Radon gas is colorless and odorless, so you cannot sense it on your own. It decays into radioactive particles that can lodge in lung tissue when inhaled. The decay products are what cause the health risk, and the risk increases with both concentration and duration of exposure. The basement tends to have the highest concentrations because it is closest to the source and often has less air movement. Basement ventilation can help, but many basements have limited natural airflow, especially finished basements where windows are covered or sealed. That is why a single measurement of [radon in basement](#) levels can easily exceed what you would find on the main floor.

I recall inspecting a home in Edwardsville where the owners had finished the basement into a family room. They had installed carpet over a concrete slab, built walls, and added furniture. When we placed a continuous radon monitor in that room for 48 hours, the readings spiked during periods when the furnace ran, because the furnace drew air from the basement and created negative pressure. That negative pressure pulled more radon from the soil into the

house. A simple radon test kit using activated charcoal would have given them a snapshot, but the continuous monitor showed the pattern over time. That kind of detail matters if you are trying to decide whether to invest in mitigation.

Choosing the Right Test for Your Home

The most common approach in Metro East Illinois is a short-term test using an activated charcoal device. You place it in the basement, leave it for two to seven days, and mail it to a lab. Activated charcoal adsorbs radon from the air, and the lab measures the radioactivity to estimate the average concentration. These kits are inexpensive and widely available through hardware stores or online. But they have limits. If you test during a rainy week or when windows are open, the result may not reflect your true year-round exposure. The US Environmental Protection Agency recommends that if your short-term result is above 4 pCi/L, you should follow up with a long-term test or a professional measurement before starting mitigation.

For a longer view, an alpha track detector is a better choice. These devices use a special plastic film that records damage from alpha particles emitted by radon decay. You leave them in place for three months to a year. The alpha track detector gives a more accurate annual average, which is what matters for health decisions. I often suggest that homeowners in Belleville and O'Fallon IL start with a short-term test to get a quick answer, and if it comes back above 2 pCi/L, switch to a long-term alpha track detector for a full season. That two-step approach saves time and money while still giving reliable data.

If you want real-time data, a continuous radon monitor is the gold standard. These electronic devices plug into a wall and sample the air every hour or so. They can show you how radon levels change with weather, furnace cycles, and daily activities. A continuous radon monitor is usually rented by a radon mitigation contractor or purchased for a few hundred dollars. I have used them in Collinsville homes to identify the worst periods of the day, which helped design a mitigation system that only runs when needed. But for a simple yes-or-no answer, a radon test kit with activated charcoal is perfectly adequate.

What to Do When Levels Are High

If your test shows radon in basement above 4 pCi/L, the next step is mitigation. The most common and effective method in our region is sub-slab depressurization. This involves drilling a small hole through the basement slab, creating a suction point underneath the concrete, and running a pipe from that point to a fan that exhausts the radon gas outside. The fan runs continuously, keeping the area under the slab at a lower pressure than the basement air. This prevents radon from being pulled inside. Sub-slab depressurization works well for most homes

in Metro East Illinois because the soil is generally permeable enough to allow suction to pull from a large area under the house.

In some homes, a sump pump system can be adapted for radon mitigation. If you already have a sump pit for groundwater control, a radon mitigation contractor can seal the pit cover and vent it to the outside with a fan. This is often less invasive than drilling a new hole. But it only works if the sump is located near the center of the basement and is properly sealed. I have seen cases where a sump cover was loose, and the pit was actually drawing radon from the soil and distributing it into the basement. Sealing that cover and adding a vent reduced levels by more than half.

Other techniques include crack sealing and improving basement ventilation. Crack sealing alone rarely solves the problem because radon can enter through the entire slab surface, not just visible cracks. But combined with sub-slab depressurization, it improves efficiency by reducing the amount of outside air that the system has to pull through. A heat recovery ventilator can also be added to bring in fresh outdoor air and dilute radon levels. However, in a humid climate like Metro East Illinois, a heat recovery ventilator must be carefully sized and maintained to avoid moisture problems. I usually recommend it only as a supplement to active soil suction, not as a standalone solution.

Working With a Local Radon Mitigation Contractor

Hiring a radon mitigation contractor who knows the local geology and building practices makes a big difference. In Metro East Illinois, homes vary from historic brick structures in Belleville to modern developments in Edwardsville. A contractor who has worked in this area understands the typical foundation types, soil conditions, and common radon entry points. They can also help you interpret the radon map for your specific neighborhood, because the statewide map is only a general guide. The US Environmental Protection Agency's radon map shows Zone 1 for most of the Metro East area, but within that zone, actual levels can vary widely from one street to the next.

Air Sense Environmental is one of the local companies that provides radon testing and mitigation services in Belleville, Edwardsville, O'Fallon IL, and Collinsville. When you call them, they start with a thorough assessment of your home, including a radon test if you haven't done one recently. They use continuous radon monitors for their initial measurements so they can see the daily pattern. Then they design a mitigation system that fits your basement layout and budget. I have seen their work in several homes, and the installation is clean and professional.

One thing I appreciate about working with a local contractor is that they can schedule the work quickly. In the Metro East area, radon levels tend to be highest in the fall and winter when homes are closed up and the stack effect pulls air from the basement. If you discover high

radon in basement during those months, you want mitigation done before spring, not after. A contractor who knows the area can prioritize urgent cases.

Long-Term Monitoring After Mitigation

After a mitigation system is installed, you should retest the basement to confirm the radon level has dropped below 4 pCi/L. Many contractors include a follow-up test in their price. I recommend using a continuous radon monitor for the retest, because it shows you the levels over a full week and catches any spikes that a short-term test might miss. If the levels are still high, the contractor can adjust the fan speed, add more suction points, or improve the sealing around the basement slab.

Even after successful mitigation, it is smart to retest every two years. Radon levels can change as the soil settles, as the house settles, or if you make changes to the foundation or basement ventilation. A simple radon test kit every couple of years gives you peace of mind. I have a client in O'Fallon IL who retests every fall, and the levels have stayed well below 2 pCi/L for five years since the sub-slab depressurization system was installed. That consistency comes from the quality of the original installation and the regular follow-up.

Final Thoughts on Radon in Basement

If you live in Metro East Illinois and have a basement, testing for radon should be on your home maintenance checklist. The US Environmental Protection Agency estimates that radon causes thousands of lung cancer deaths each year, and it is the second leading cause after smoking. The good news is that radon in basement is a solvable problem. With the right test, accurate measurement, and a properly designed mitigation system, you can bring your indoor levels down to a safe range. Whether you choose a radon test kit from the hardware store or hire a professional radon mitigation contractor, the important thing is to start. The basement is where the risk is highest, but it is also where the solution begins.