

Radon reduction systems becoming more common

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Questions frequently arise when homebuyers encounter a radon reduction system. People are usually unfamiliar with them and are sometimes leery of their presence.

A large number of radon reduction systems have been installed in the past 15 years, so they're not uncommon anymore. Still, the vast majority of houses do not have them, so most people know little or nothing about them. Although the systems are simple in design, questions arise because it is not immediately obvious how the systems work or whether they have significant drawbacks.

To understand radon reduction systems, you have to know some basics of radon gas and how it gets into houses. Radon is an element that exists in the form of an odorless and colorless gas. It is produced in the chain of radioactive decay that begins with uranium, which occurs naturally in soils and rocks.

Since radon is a gas, it moves easily through the soil once it is produced, migrating from the soil to the atmosphere, or into houses through cracks, joints and pores in the house foundations and floor slabs. It tends to be more concentrated inside houses than outdoors. This is mainly because radon indoors is not diluted by the atmosphere the way it is outdoors, but also because radon flows into houses at a higher rate than elsewhere due to the slight negative pressure that is often generated by exhaust fans, clothes dryers, heating system flues and fireplace flues, all of which evacuate air from the house.

Radon is radioactive and an increased risk of lung cancer is associated with prolonged exposure. A study by the National Academy of Sciences found that indoor radon contributes to about 20,000 cancer deaths each year. The Environmental Protection Agency recommends testing indoor radon levels, and taking measures to reduce them where levels equal or exceed four picocuries per liter, the so called "action level".

To determine whether there is a high concentration of radon in a house, measurement is normally conducted over two days. The lowest livable space in a house is tested, and the results are an indication of the level of radon exposure that a person living in the house has the potential to experience.

Most often testing is performed during real estate transactions. But the EPA recommends testing all homes, and many homeowners are choosing to test. For homebuyers, the right to have radon testing performed can be reserved by including a radon testing clause in their offer to purchase the property. The terms usually include an agreement by the seller to make repairs if radon levels are found to meet or exceed the action level

Systems to reduce indoor radon levels usually accomplish it by essentially creating a suction under the basement floor slab to intercept radon gas before it enters the house, and venting the collected radon to the exterior. They typically consist of a 4-inch PVC pipe with one end sealed into a hole punched in the basement floor slab, and the other end at the exterior of the house.

A specialized exhaust fan is installed in the outdoor portion of the pipe to create the desired suction under the basement floor. A telltale sign of a radon system is a vertical pipe in the basement with a vacuum gauge on it, usually a manometer – a U-shaped tube partially filled with colored liquid. The radon exhaust fan runs at all times, consuming a modest amount of

electricity, and the manometer lets the homeowner tell at a glance whether the fan is pulling the required vacuum.

These systems are reliable. After an installation, the house is retested for radon with the radon reduction system running. If that test reveals the radon level in the house is in the acceptable range, it is safe to assume that levels will remain in that range as long as the system is kept running. For greater confidence, the homeowner can consider retesting the house the next year, especially during the heating season if the system was installed during warm weather.