Calvert County Environmental Commission

Frequently Asked Questions About the Environment

RADON

1. **Are there any indoor air quality issues I should know about?**

   Yes. Radon gas is a potential problem in the lower levels of some homes but can also be found in the upper levels of the home. The figure below gives a scale of radon levels, measured in picocuries per litre of air (pCi/L).

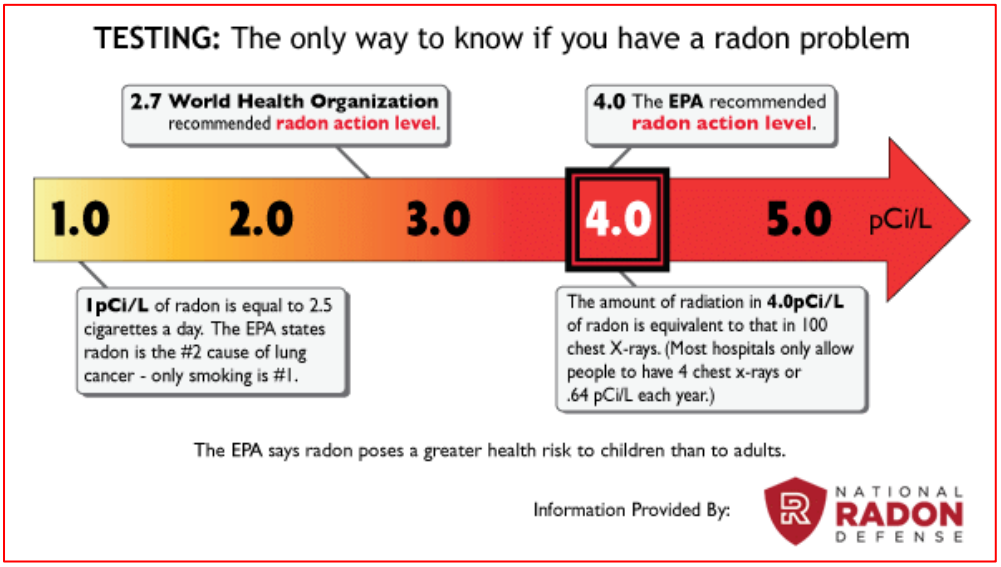

Figure 1: Radon Level Risks. Source: www.nationalradondefense.com/radon-information/radon-levels.html

2. **What is radon?**

   Radon is a naturally occurring gas that you cannot see, smell or taste that can seep into buildings from the underlying soils and bedrock. As indoor air warms, it rises and creates suction at the lowest level, such as a basement, which can pull radon out of the soil and into the house. Radon levels are low outdoors and are not a health problem because the gas is diluted; however, indoor levels can accumulate.

3. **Why is radon dangerous?**

   Radon (isotope-222) has been linked to an increased risk of lung cancer. According to the U.S. Environmental Protection Agency (EPA), radon exposure is responsible for roughly 21,000 lung cancer deaths in the U.S. each year. The Surgeon General has warned that inhalation (not ingestion of radon in well water) is the second leading cause of lung cancer, behind smoking, in the U.S. today. When radon decays, it emits alpha particles that can alter the way lung cells reproduce. Basements and first floors

typically have the highest radon levels because of their closeness to the ground. Radon-222 adheres to surfaces and dust particles, so airborne concentrations tend to be higher in dusty areas with cigarette smoke. The longer you are exposed to airborne radon, the greater the risk of having lung cancer. If you smoke and your home has elevated levels, your risk of lung cancer is especially high. Families with a hereditary predisposition to cancer should be more concerned about exposure to radon than families who don't have a history of cancer.

4. Is airborne radon found in Calvert County?

Airborne radon is found everywhere in Maryland, including Calvert County. As illustrated below, Calvert County is in the highest zone. EPA data for airborne radon levels found that 40.8% of Calvert County homes and other buildings tested had radon gas levels above 4 pCi/L, the threshold for mitigation. The amount of radon at any location varies due to the soil and underlying rock formations; radon levels in your neighbor's basement may be higher or lower than radon levels in your basement.

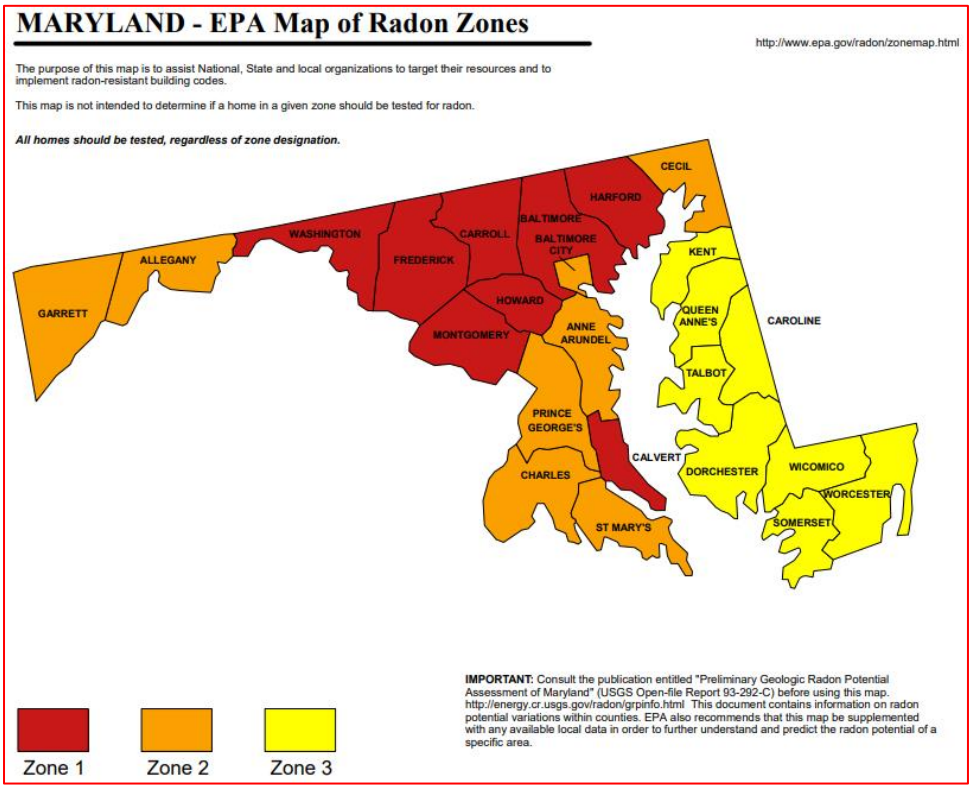

Figure 2: Maryland Radon Zones. Source: www.epa.gov/sites/default/files/2014-08/documents/maryland.pdf

5. How can I find out if my family is at risk?

A simple, inexpensive radon test kit certified by the National Radon Proficiency Program or the National Radon Safety Board (this is critical for accurate testing) can be purchased at most hardware stores, home improvement centers or online. The purchase price, ranging $10 to $30 per kit, typically includes the lab analysis, but not the postage to mail the kit to the vendor to be analyzed.

Alternatively, test kits can be ordered from the Maryland Department of the Environment (MDE) at a reduced cost. The Calvert County Environmental Commission may periodically offer free radon test kits.

A short-term test kit requires a 3 to 90-day exposure period. Carefully follow the directions that come with the test kit. At the end of the test period, seal the test kit immediately, record the information requested by the vendor, and mail it to the testing lab. If the test results are less than 2 pCi/L, no further testing or

other actions are needed. If later, your home or building foundation develops cracks, this test should be repeated.

The short-term radon test will tell you if an additional long-term test (greater than 90 days and usually 6–12 months) should be done to confirm elevated radon gas levels. If the second test also indicates elevated radon gas levels, mitigation is needed. If the radon test results are above 2 pCi/L but less than 4 pCi/L (EPA's action level for mitigation), a second long-term radon test is recommended to confirm radon levels are below the action level. If any of the tests show concentrations greater than 4 pCi/L, mitigation is recommended to reduce airborne radon to safer levels.

6. How can I mitigate radon?

The primary method of radon mitigation, or reduction, involves installing an active soil depressurization (ASD) system. An ASD system removes radon gas from the soil beneath a house's foundation (basement, slab-on-grade or crawl space). The system includes a 3- to 4-inch diameter PVC vent pipe, a continuously running suction fan and a system indicator.

A radon mitigation contractor credentialed by the American Association of Radon Scientists & Technologists and licensed by the Maryland Home Improvement Commission can be found on the MDE website. The contractor should provide a guarantee that the ASD system will reduce radon gas levels in your home to below the EPA Action Level of 4 pCi/L and conduct a 2- to 7-day confirmation test soon after the ASD installation. The ASD system should have a warning device to indicate when it is not operating properly. Depending upon the size and construction of your basement or first floor, installing an ASD system may cost about $800 to $2,500.

7. Can radon also be in my well water?

Possibly. If you are concerned about radon in your well water, have the water tested. Because groundwater is the only source of potable water for Calvert County residents, exposure to airborne radon could come from the volatilization of radon in groundwater. Because radon volatilizes rapidly when exposed to air, significant amounts of airborne radon can escape when well water is used for showering, doing laundry and washing dishes. This volatilized radon can then be inhaled and lead to elevated indoor radon levels.

If your well water has elevated radon levels, it can be fixed. Point-of-entry treatment can effectively remove radon from well water before it enters your home. Point-of-use treatment devices can remove radon from your well water at a specific tap, but only from that tap. To learn more about dealing with radon in well water, call the Environmental Health Helpline at the Maryland Department of Health at 1-866-703-3266.

For further information on radon:

- Air Chek, Inc.: Interactive Radon Map
- US EPA: Radon
- CDC: ATSDR Case Studies in Env'l Medicine
- Kansas State Univ.: Kansas Radon Program
- MD Dept. of Health, Env'l Health: Radon
- US EPA: Indoor Air Quality (IAQ)
- National Radon Hotline: 1-800-767-7236
- National Radon Fix-It Line: 1-800-644-6999
- MD radon officer: Jim Lewis, 866-703-3266