

US EPA ARCHIVE DOCUMENT



Radon 101 and Radon Testing Do's and Don'ts

TEPM

April 7, 2016

What is Radon?



Radon is a naturally occurring, colorless, odorless, and **tasteless** radioactive soil gas

When uranium, radium & thorium break down through natural "decay" in the soil, rock & water - radon gas gets into the air that we breathe

Why is Radon a Concern?



Radon (Rn) decays - creates products that cling to airborne particles & can be trapped in lungs

Rn decay products release energy - can damage our lung tissue & lead to lung cancer

Rn is a KNOWN Human Lung Carcinogen (EPA, Surgeon General, NAS, NCI, WHO, & numerous studies)

Radon as a Health Concern

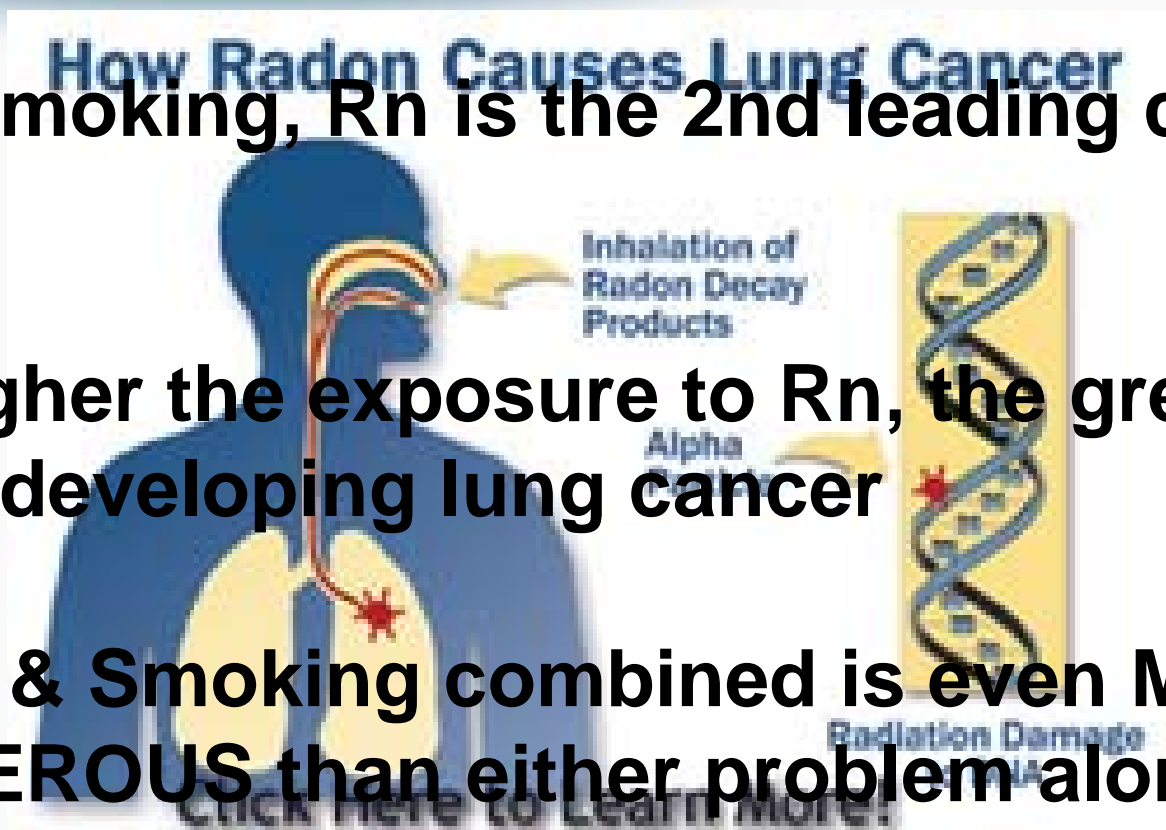


How Radon Causes Lung Cancer

After Smoking, Rn is the 2nd leading cause of lung cancer

The higher the exposure to Rn, the greater the risk of developing lung cancer

Radon & Smoking combined is even MORE DANGEROUS than either problem alone.



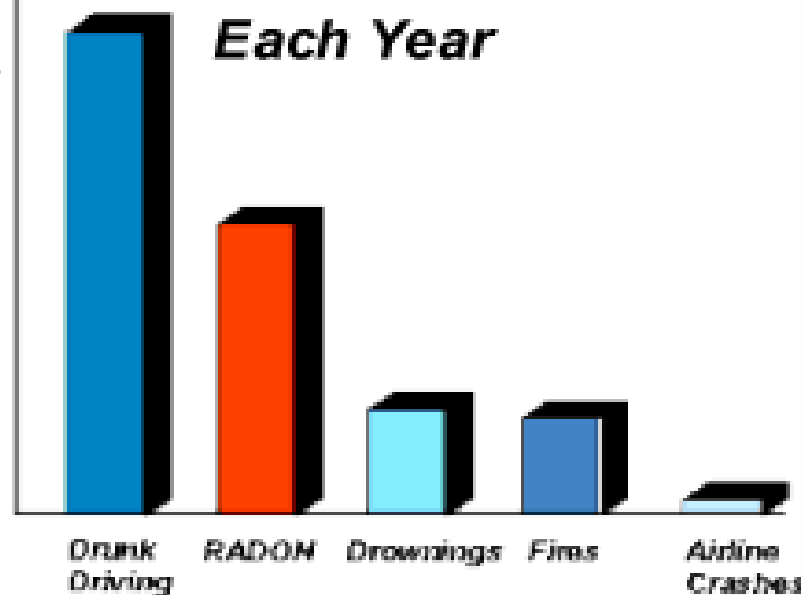


30,000

Deaths
per year

10,000

**Radon is Estimated
to Cause Thousands
of Cancer Deaths
in the U.S.
Each Year**



Is Rn Exposure Safe?



Radon - Classified as **Class A Carcinogen** - No exposure is considered safe, by definition

Outdoor Radon Levels: Range from about 0.2 to 0.7 picocuries per Liter (pCi/L) of air

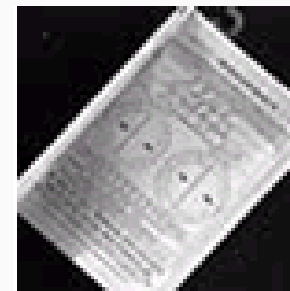
Cannot get 0.0 (zero) exposure to Radon

Determining Radon Exposures



TEST!

Testing homes are Easy & Inexpensive Too
Do-It-Yourself -Test Kits purchased at most home improvement/ hardware stores; Mail Order Kits available; Some States provide low cost kits, or coupons for low cost kits from manufacturers.



Short Term
Test Kits
(Charcoal)

Call your State Radon Program for more information.

Guidelines & Recommendations



EPA Recommends the Following:

Reduce Rn Exposures if levels are 4.0 pCi/L of air or higher

Higher levels of Radon pose greater risks. Reduce these high risks by using a properly trained mitigator

Long term testing is preferred (>3months, but annual is best), however short term testing can provide adequate results in real estate transactions.

Contact your State Program for State specific requirements

Radon Test Device Placement



EPA recommends that testing device(s) be placed in the lowest level of the home suitable for occupancy. This means testing in the lowest level (such as a basement), which a buyer could use for living space without renovations. The test should be conducted in a room to be used regularly (such as a family room, living room, playroom, den, or bedroom); do **not** test in a kitchen, bathroom, laundry room or hallway. Usually the buyer decides where to locate the radon test, based on their expected use of the home. A buyer and seller should explicitly discuss and agree on the test location to avoid any misunderstanding. Their decision should be clearly communicated to the person performing the test.

If You Do the Test Yourself



When you are taking a short-term test, close windows and doors to the outside and keep them closed, except for normal entry and exit. If you are taking a short-term test lasting less than four days, be sure to:

- * Close your windows and outside doors at least 12 hours before beginning the test;
- * Do not conduct short-term tests lasting less than four days during severe storms or periods of high winds;

If You Do the Test Yourself- Continued



- * Follow the testing instructions and record the start time and date;
- * Place the test device at least 20 inches above the floor in a location where it will not be disturbed and where it will be away from drafts, high heat, high humidity, and exterior walls;
- * Leave the test kit in place for as long as the test instructions say; and
- * Once the test is finished, record the stop time and date, reseal the package, and return it immediately to the lab specified on the package for analysis.

If You Do the Test Yourself- Continued



You should receive your test results within a few days or weeks. If you need results quickly, you should find out how long results will take and, if necessary, request expedited service.

Testing Duration



Whether you test for radon yourself, or hire a qualified tester, all radon tests should be taken for a minimum of 48 hours. Some devices require a longer (minimum) length of time, e.g., a 7-day charcoal canister device, etc.

Testing Duration Continued



Long-term tests remain in your home for more than 90 days. **Alpha track** and **electret ion chamber detectors** are commonly used for this type of testing. A long-term test result is more likely to tell you your home's year-round average radon level than a short-term test. If time permits (more than 90 days), long-term tests can be used to confirm initial short-term results. When long-term test results are 4 pCi/L or higher, EPA recommends fixing the home.

What do the Results Mean??



Your radon test results may be reported in either picocuries per liter of air (pCi/L) or working levels (WL). If your test result is in pCi/L, EPA recommends you fix your home if the radon level is 4 pCi/L or higher. If the test result is in WL, EPA recommends you fix the home if the working level is 0.02 WL or higher. Some states require WL results to be converted to pCi/L to minimize confusion.

Useful Comparisons



The National average for radon exposure levels in the United States for homes tested is about 1.3 pCi/l of air.

The outdoor air has a concentration that ranges from about 0.3 to 0.7 pCi/l of air in the Midwest.

The World Health Organization has set an action level equivalent to 2.7 pCi/l of air

EPA has set an action level of 4.0 pCi/l of air.

Most mitigations performed now are able to reduce radon levels below 2.0 pCi/l of air, in many cases to outdoor levels.

There is no such thing as zero radon here!



Now for the Audience
participation part....
Questions....

Contact Information



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