

7th Annual Mid-Atlantic Radon Stakeholder Meeting

Radon Health Effects and Communicating Radon Risk

Clifford S. Mitchell, MS, MD, MPH
Prevention and Health Promotion Administration
Environmental Health Bureau
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Objectives

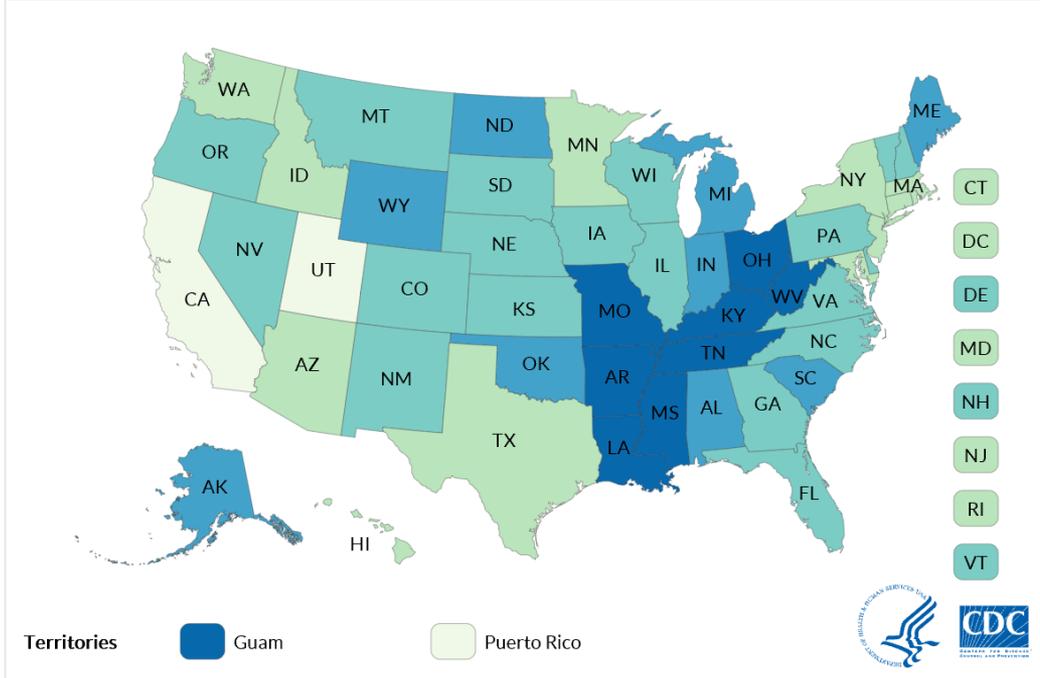
- At the conclusion of the talk, participants will be able to
 - ❖ Describe the public health significance of Radon in Maryland
 - ❖ Provide clients with information about State and Federal resources related to Radon
 - ❖ Understand prevention and mitigation strategies and the importance of testing homes for Radon

Smoking Rates by State

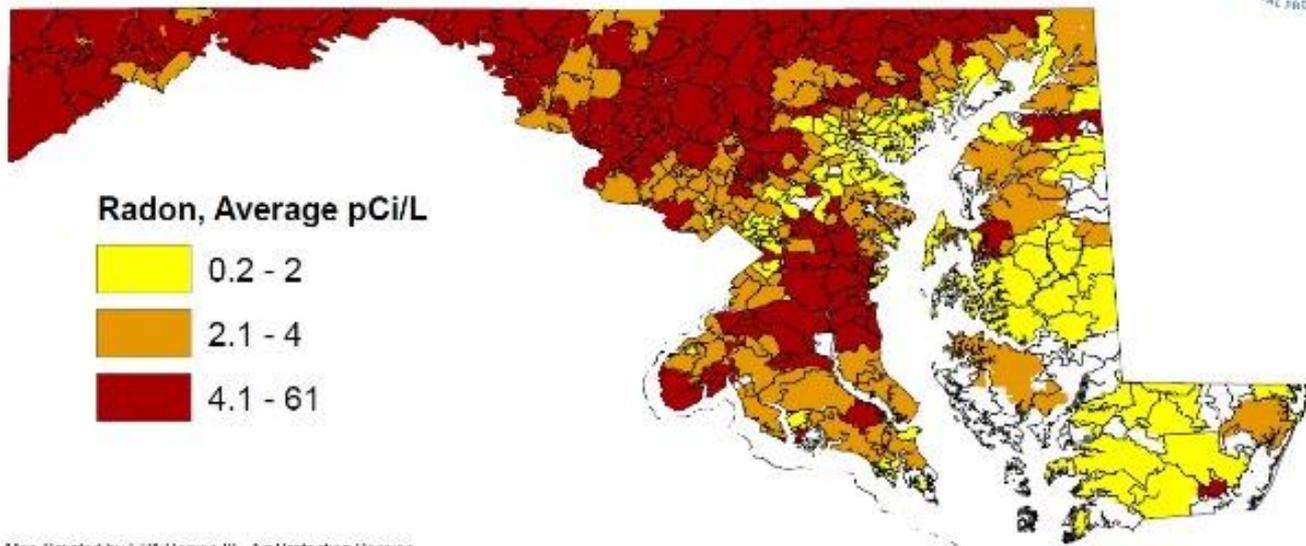
Current Cigarette Use Among Adults (Behavior Risk Factor Surveillance System) 2016

About This Map

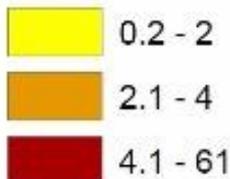
- 8.8% - <12.1%
- 12.1% - <15.3%
- 15.3% - <18.6%
- 18.6% - <21.8%
- 21.8% - 25.1%



Maryland: 2005-2016 Average Radon Measurements By ZIP Code



Radon, Average pCi/L



Map Created by EPA Region III - Air Protection Division

Data provided by Air Chek, Inc., Alpha Energy Labs, Landauer Radon, RAdata Inc., and Radon Testing Corp of America, Inc.

This map is for informational purposes only. EPA received this data from the referenced labs and cannot verify the accuracy or quality of the data. Labs collected data (January 2005 - April 2016) from testing kits that includes all testing performed, including pre and post mitigation, duplicate testing, different floors (basement, first floor, second floor, etc.), and different testing methods (charcoal canister, liquid scintillation, but not radon in water testing.)

References (from most recent Quality Assurance Plan for reference only, actual QAP used during data collection may be different.):

Air Chek, Inc. "Laboratory Quality Manual." 08/17/2015

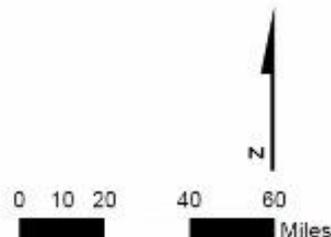
Alpha Energy Labs - "Quality Control/Quality Assurance Manual Revision 10." - 7/8/2016

Landauer Radon - "Quality Manual for Landauer Nordic AB" - 05/09/2016

RAdata Inc. - "Quality Assurance Plan" - 01/29/2016

RTCA - "Quality Manual, Methods for Measuring Radon in Air & Water with Charcoal Canisters, Liquid Scintillation Vials, Electret Ion Chambers and Continuous Radon Monitors." - 10/01/2014

Date: 9/31/2016



Where Does Radon Come From?

- Natural decay product of Uranium → Thorium → Radium → Radon
- Alpha (α) emitter with short half-life

Radon in Nature

- Most soils in the United States contain between 200 and 2,000 pCi of radon per liter of soil air (range 20 - >100,000 pCi/L)
- Outdoor air ranges from less than 0.1 pCi/L to about 30 pCi/L, but it probably averages about 0.2 pCi/L
- Radon in indoor air <1 pCi/l to about 3,000 pCi/L
- The amount of radon dissolved in ground water ranges from about 100 to nearly 3 million pCi/L

Talking With Your Patients About Radon

Cancer Mortality 2018

Cancer Type	Estimated U.S. Deaths in 2018 ^{4,5}
1. Lung and Bronchus	154,050
2. Colon and Rectum	50,630
3. Pancreas	44,330
4. Breast	41,400
5. Liver and Intrahepatic Bile Duct	30,200
6. Prostate	29,430
7. Leukemia	24,370
Radon-Induced Lung Cancer	21,100*
8. Non-Hodgkin Lymphoma	20,960
9. Urinary Bladder	17,240
10. Esophagus	15,850
11. Kidney and Renal Pelvis	14,970
12. Ovary	14,070
13. Myeloma	12,770

* The 21,100 radon-induced lung cancer deaths also are included in the estimate of lung and bronchus cancer deaths. The 21,100 estimate is based on risk estimates using U.S. demographic information from 1995.

Source: Reducing the Risk from Radon: Information and Interventions



CRCFD Publication E-15-2

Reducing the Risk from Radon: Information and Interventions

A Guide for Health Care Providers

RadonLeaders.org



MARYLAND
Department of Health

Health Effects of Radon

Smokers

Radon Level	If 1,000 people who smoked were exposed to this level over a lifetime*...	The risk of cancer from radon exposure compares to**...	WHAT TO DO: Stop smoking and...
20 pCi/L	About 260 people could get lung cancer	250 times the risk of drowning	Fix your home
10 pCi/L	About 150 people could get lung cancer	200 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 120 people could get lung cancer	30 times the risk of dying in a fall	Fix your home
4 pCi/L	About 62 people could get lung cancer	5 times the risk of dying in a car crash	Fix your home
2 pCi/L	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 20 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult.)
0.4 pCi/L	About 3 people could get lung cancer	(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be lower.
 * Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).
 ** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.

Non-Smokers

Radon Level	If 1,000 people who never smoked were exposed to this level over a lifetime*...	The risk of cancer from radon exposure compares to**...	WHAT TO DO:
20 pCi/L	About 36 people could get lung cancer	35 times the risk of drowning	Fix your home
10 pCi/L	About 18 people could get lung cancer	20 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 15 people could get lung cancer	4 times the risk of dying in a fall	Fix your home
4 pCi/L	About 7 people could get lung cancer	The risk of dying in a car crash	Fix your home
2 pCi/L	About 4 person could get lung cancer	The risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 2 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult.)
0.4 pCi/L		(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be higher.
 * Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).
 ** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.



Outreach Efforts

- Maryland Department of Health and Maryland Department of the Environment working together to increase awareness, testing
- Print Flyers
- Social Media
- Health Care Providers

What Should You Tell Your Patients?

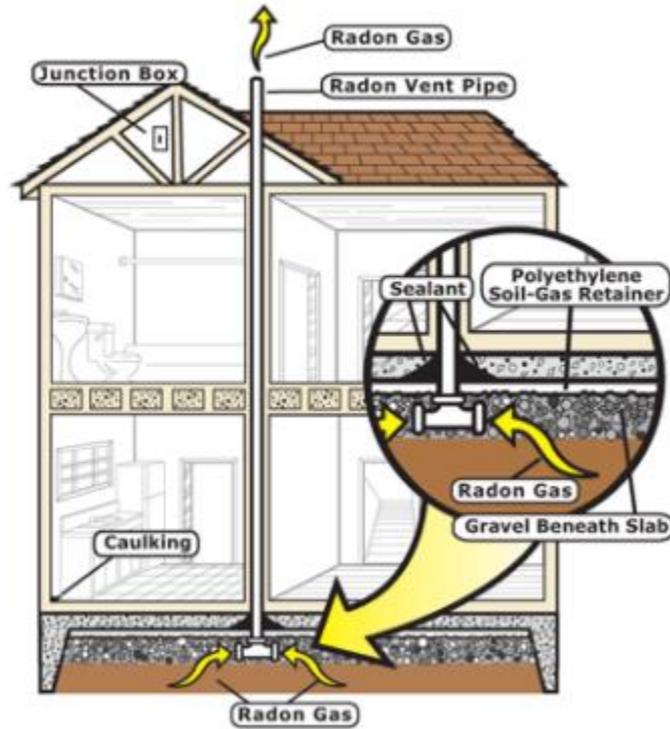
What Does My Test Mean?

Your Radon test result is used to decide whether additional testing or some mitigation (removal of Radon) is necessary. If your test is:

Less than 2 pCi/L	2-Less than 4 pCi/L	4 pCi/L or more
No further action is needed at this time; consider another test in the future if the condition of the home changes (cracks in basement, etc.)	No action is needed, but you should re-test at least every 5 years or if home conditions change (construction, new basement, etc.)	You should do another test (either short- or long-term) to confirm the results; if confirmed, consult a certified Radon Mitigation Contractor

While Radon does increase the risk of cancer, the good thing is that you can eliminate the risk increase by getting rid of the Radon. If your home has Radon and you or someone in your family smokes, the risk of cancer is higher. Call the Maryland Tobacco Quitline at: 1-800-QUIT NOW (1-800-784-8669)

Radon-Resistant New Construction





Maryland Department of Health
Prevention and Health Promotion Administration

<https://phpa.health.maryland.gov>