7<sup>th</sup> Annual Mid-Atlantic Radon Stakeholder Meeting Radon Health Effects and Communicating Radon Risk

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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



## Lung Cancer in Maryland

Lung and Bronchus Cancer

Incidence Rates\* by State, 2014†





## 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





Date: 8/31/2016

Ion Chambers and Continuous Radon Monitors." - 10/01/2014

## Where Does Radon Come From?

# ≻Natural decay product of Uranium → Thorium → Radium → Radon

### > Alpha ( $\alpha$ ) 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</p>
- 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 <sup>4,5</sup>				
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



### **Reducing the Risk from Radon:** Information and Interventions *A Guide for Health Care Providers*





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## **Health Effects of Radon**

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
0.4 pCi/L	About 3 people could get lung cancer	(Average outdoor radon level)	pCi/L is difficult.)

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.

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Prevention and Control Reports.

Note: If you are a former smoker, your risk may be lower.

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(Source: https://www.epa.gov/radon/health-risk-radon)



## **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



### MARYLAND RADON FACTS

How to Protect Yourself and Your Family from Radon



#### What is Radon? Why Is it Important?

Radon is an invisible radioactive gas in the earth that can get into your home. Breathing Radon can increase your risk of lung cancer. If you smoke, Radon increases your risk of lung cancer even more than if you don't smoke.

The only way to know how much Radon is In your home is do a Radon test. If your home has too much Radon, it is possible to remove the Radon and lower the risk of cancer for you and your family.

#### Where is Radon found in Maryland? (See Map)

Although Radon can be found anywhere, some parts of Maryland have soil that make Radon more likely. Basement and first floors typically have the highest Radon levels because of their closeness to the ground.

#### Why should I test my home for Radon?

Radon causes cancer. The longer you and your family are exposed to Radon, the greater the risk of lung cancer. The risk is especially high for people who also smoke.

#### How do I test my home?

Testing your home is easy. Look for test kits in most area hardware stores and home improvement stores. Look for test kits that are certified by NRPP or NRSB, and follow the directions on the package. Generally, you should:

- Place the test kits in the lowest level that people will occupy, and/or the areas that are most heavily used (like bedrooms, playrooms)
- Place the kits in a dry area (not bathrooms or kitchens) where the kits will not be disturbed, and are not near moving air (windows, ventilation ducts)
- Leave the kits for somewhere between 2 and 90 days (the longer the test, the more accurate it is), seal them up immediately and mail to the testing company

For More Information: 1-866-703-3266

#### Quick Facts:

- Testing your home for Radon is cheap and easy, and it's the only way to know if your family is at risk
- It's easy to fix Radon problems in homes and schools
- There are ways to make new homes Radonresistant



Radon concentrations across Maryland. See interactive map at: https://maps.health.maryland.gov/phpa/eh/Radon

#### 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	No action is needed, but you	You should do another test
this time; consider another test	should re-test at least every	(either short- or long-term) to
in the future if the condition of	5 years or if home conditions	confirm the results; if con-
the home changes (cracks in	change (construction, new	firmed, consult a certified
basement, etc.)	basement, etc.)	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)

#### Can I fix my home if it has Radon?

Yes, Fixing your home is usually easy and not very expensive. You can find a list of Radon contractors at: www-mde.state.md.us under the Air Tab and look for the Radon Link. You should look for contractors who are credential by the American Association of Radon Scientist & Technologist (AARST) and are licensed by the Maryland Home Improvement Commission (MHIC).

#### What about buying or selling a home?

MDE and MDH recommend testing your home for Radon before you sell it. It's good for both you and buyer to know. If you are buying a home, MDE and MDH recommend asking about Radon, and about any testing or mitigation that has been done.

### New homes can be built with features to reduce Radon

Building new homes with simple and cost-effective Radon-resistant features can reduce Radon entry. Contact your builder or visit www.epa.gov/ Radon/rmc/index.html for more information.

Every home should be tested before, or soon after, you move in. Even homes built with Radon-resistant construction features should be tested. If high Radon levels are found, it is easier and costs less to reduce Radon levels in homes that are built Radon-resistant.

#### For More Information:

www.mde.maryland.gov, look under the Air Tab for Radon https://phpa.health.maryland.gov/OEHFP/EH/Pages/Radon.aspx https://www.epa.gov/Radon Environmental Health Helpline: 1-866-703-3266 Contact your local health department





### What Should You Tell Your Patients?

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### **Radon-Resistant New Construction**





(Source: https://www.epa.gov/radon/radon-resistant-construction-basics-and-techniques)



### Maryland Department of Health **Prevention and Health Promotion Administration**

https://phpa.health.maryland.gov

