Objectives

➢ At the conclusion of the talk, participants will be able to

❖ Describe the public health significance of Radon in Maryland

❖ Provide patients 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%

Territories
- Guam
- Puerto Rico
Maryland: 2005-2016 Average Radon Measurements By ZIP Code

Radon, Average pCi/L
- 0.2 - 2
- 2.1 - 4
- 4.1 - 61

Map Created by EPA Region III - Air Protection Division

Data provided by Air Chek, Inc., Alpha Energy Labs, Landauer Radon, RADdata 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." 06/17/2015
- RADdata Inc. - "Quality Assurance Plan" - 01/20/2016
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
# Health Effects of Radon

<table>
<thead>
<tr>
<th>Radon Level</th>
<th>Smokers</th>
<th>Non-Smokers</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 pCi/L</td>
<td>About 260 people could get lung cancer</td>
<td>About 36 people could get lung cancer</td>
</tr>
<tr>
<td>10 pCi/L</td>
<td>About 150 people could get lung cancer</td>
<td>About 18 people could get lung cancer</td>
</tr>
<tr>
<td>8 pCi/L</td>
<td>About 120 people could get lung cancer</td>
<td>About 15 people could get lung cancer</td>
</tr>
<tr>
<td>4 pCi/L</td>
<td>About 62 people could get lung cancer</td>
<td>About 7 people could get lung cancer</td>
</tr>
<tr>
<td>2 pCi/L</td>
<td>About 32 people could get lung cancer</td>
<td>About 4 people could get lung cancer</td>
</tr>
<tr>
<td>1.3 pCi/L</td>
<td>About 20 people could get lung cancer</td>
<td>About 2 people could get lung cancer</td>
</tr>
<tr>
<td>0.4 pCi/L</td>
<td>About 3 people could get lung cancer</td>
<td>About 1 person could get lung cancer</td>
</tr>
</tbody>
</table>

**Smokers**

- The risk of cancer from radon exposure depends on smoking status.
- **WHAT TO DO:** Quit smoking and fix your home.

**Non-Smokers**

- The risk of cancer from radon exposure depends on smoking status.
- **WHAT TO DO:** Fix your home.

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 1999-2011 National Center for Injury Prevention and Control Reports.**

(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 to 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 anywhere, some parts of Maryland have soil that make Radon more likely. Basements 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 NASRL, 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), send them up immediately and mail to the testing company

For More Information: 1-866-703-3265

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 Radon-resistant

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:

<table>
<thead>
<tr>
<th>Less than 2 pCi/L</th>
<th>2-Less than 4 pCi/L</th>
<th>4 pCi/L or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>No further action is needed at this time. Consider another test in the future if the condition of the home changes (e.g., change of occupants, home improvements).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No further action is needed, but you should consider having a Radon mitigation system installed if the Radon concentration in your home is greater than 4 pCi/L.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You should consult a certified Radon Mitigation Contractor.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 (1-800-784-8659)

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 Mitigation contractors at www.mdo.state.md.us under the Air Tab and look for the Radon Link. You should also contact a certified contractor who is certified by the American Association of Radon Scientists and Technologists (AARST) and/or the Maryland Home Improvement Commission (MHIC).

What about buying or selling a home?
MDM recommends testing your home for Radon before you buy it. It is good for both you and the buyer to know. If you are buying a home, MDB and MDO 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/RadioactiveRadon/ 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.mdo.state.md.us, look under the Air Tab for Radon
https://www.epa.gov/Radon
Environmental Health Helpline: 1-866-703-3266
Contact your local health department
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**: 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.).
- **2-Less than 4 pCi/L**: No action is needed, but you should re-test at least every 5 years or if home conditions change (construction, new basement, etc.).
- **4 pCi/L or more**: 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

(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