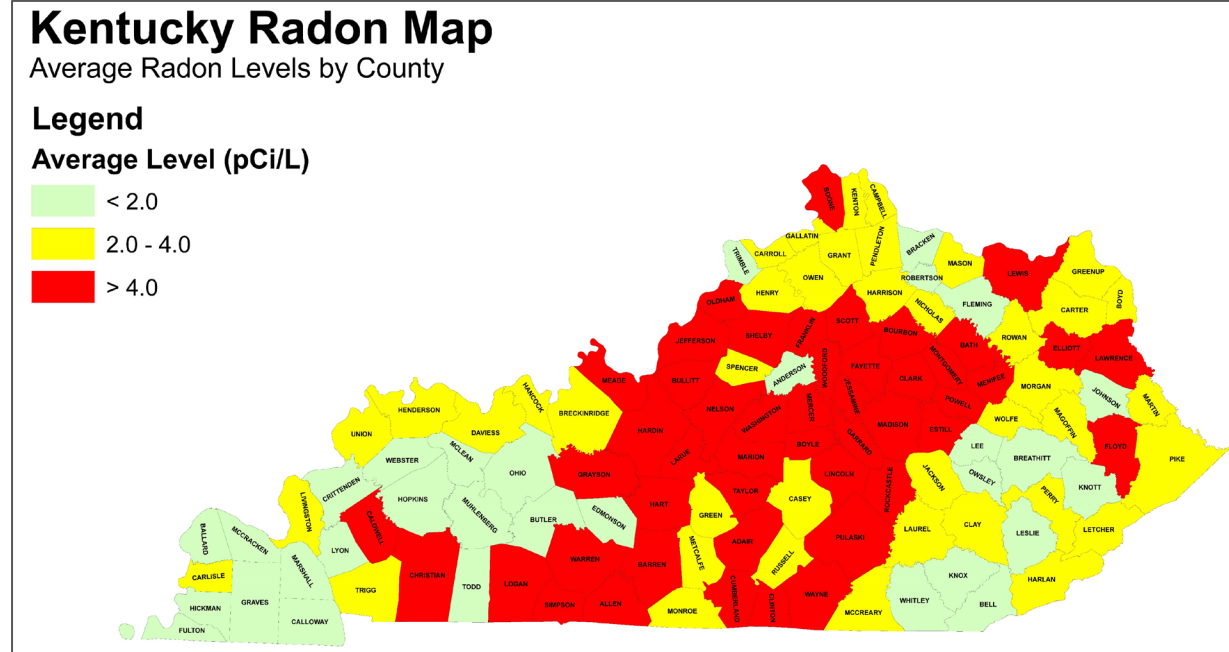


# Radon-Induced Lung Cancer



Interim Joint Committee On  
Veterans, Military Affairs, and Public Protection  
November 16, 2022

# Today's Presenters

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- Kyle Hoylman
  - Chair, Kentucky Board of Radon Safety
- Shannon Baker
  - Advocacy Director, American Lung Association in Kentucky
- Lindi Campbell
  - Kentucky Patient Advocate
  - Founder, Breath of Hope Kentucky

Kyle Hoylman  
Kentucky Board of Radon Safety


# Kentucky Board of Radon Safety


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- KRS 309.430 to 309.454 (HB77, 2022 General Assembly)
  - Kentucky Board of Radon Safety
  - Department of Professional Licensing
  - Public Protection Cabinet
  - Effective date – July 14, 2022
  - 5 voting members, 2 non-voting members
- KBRS duties include:
  - Promote control of radon in Kentucky
  - Design and administer educational and research programs
  - Receive and administer grants related to radon
  - Promulgate regulations to administer and support KRS 309.430 to 309.454

# The AARST Radon Report Card: Risk and Response

## Population and Lung Cancer Total Population: 4,461,153

 Lung Cancer Deaths: **3,065**

 Age-Adjusted Lung Cancer Incidence Rate (per 100,000) **83**

Lung Cancer Cases **4,803**

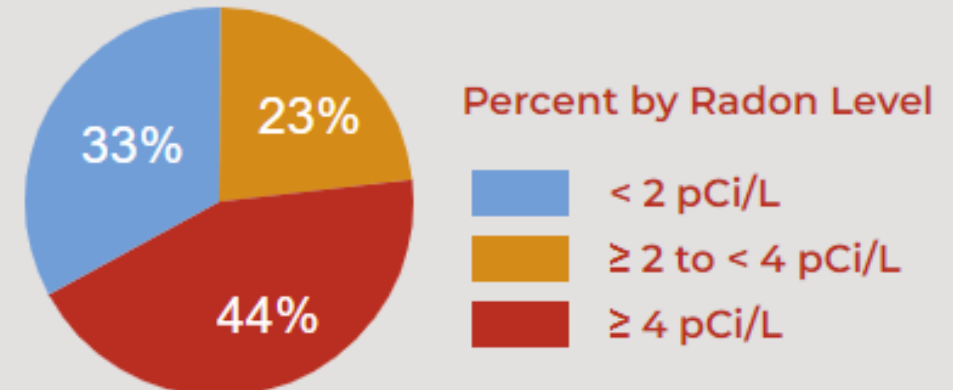
Estimated Radon-Induced Lung Cancer Cases **1,033**

## Statewide Radon Policies

Credential Required	✓	Private Certification with State Registration
Radon Standards in Effect	✓	ANSI-AARST
Homebuyer Protection Required	✓	Disclosure & Notification on Real Estate Form
Radon System Requirement for New Homes	✗	No
Type of New Home Where Required		N/A
Standard/Code for Radon System in New Homes		N/A
School Testing Required	✗	No
Radon System Requirement for New Schools	✗	No


## Buildings and Exposure Potential

Pre-Mitigation Radon Tests: 28,793



## Housing Units by Structure Type

	1 to 4 Units	5 or More Units	Total
Existing	1,765,177	217,645	1,982,822
New	7,994	3,817	11,811

 Public Schools: 1,532

# Other Information

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- Every ~25 minutes, radon-induced lung cancer claims another life in our country
- US Surgeon General issues public health warning – January 2005

**SURGEON GENERAL'S WARNING**  
Radon causes lung cancer

- The medical cost burden of radon-induced lung cancer each year in Kentucky is an estimated ~\$210M
- 2020 DoD OIG report found members of our military (and their families) at risk for exposure to radioactive, cancer-causing gas
- 2020 National Defense Authorization Act – privatized military housing radon policy requirements

# Other Information

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- Kentucky military installations require schools and other buildings to be constructed using passive soil gas control systems, post-construction testing required
- 2021 HUD OIG report found lack of departmentwide radon policy poses health risks to residents
- HUD MAP, 232 programs radon policy ongoing, departmentwide policy classifying radon as radioactive substance recommended
- FHFA mandates GSEs (Fannie Mae / Freddie Mac) to implement radon policy for multifamily buildings ~Q1 2023
- Kentucky lacks radon exposure prevention strategies in all building types – newly constructed or existing

Shannon Baker  
American Lung Association in Kentucky

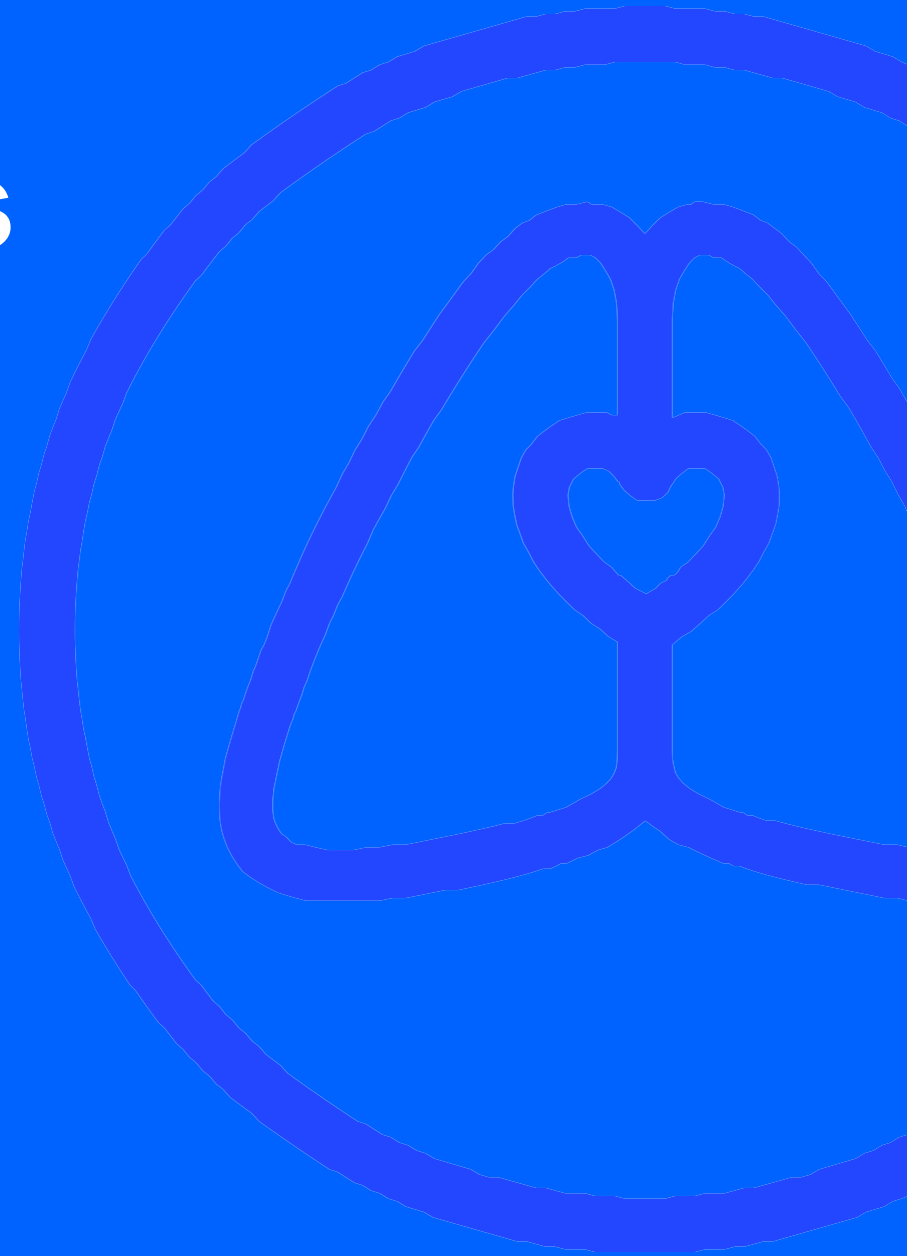




# Radon Basics

Kentucky

November 16, 2022



# What is Radon?



**Radon:** an invisible, naturally occurring, radioactive gas found in homes/buildings across the country.

You cannot:



Radon ***kills*** people!



# Why Are We Concerned About Radon?

Radon is the **#2** leading cause of lung cancer.

Radon is the **leading** cause of lung cancer among people who have **never** smoked.

The Lung Association wants to **prevent** lung cancer from all sources - including radon.

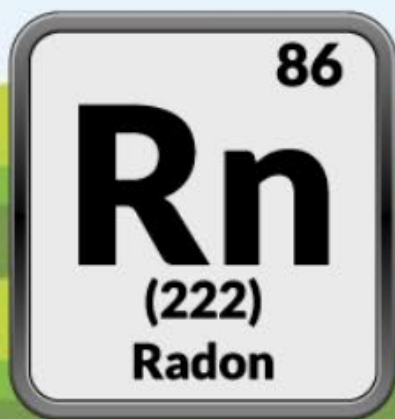


Click each card to learn more about why we are concerned about radon.

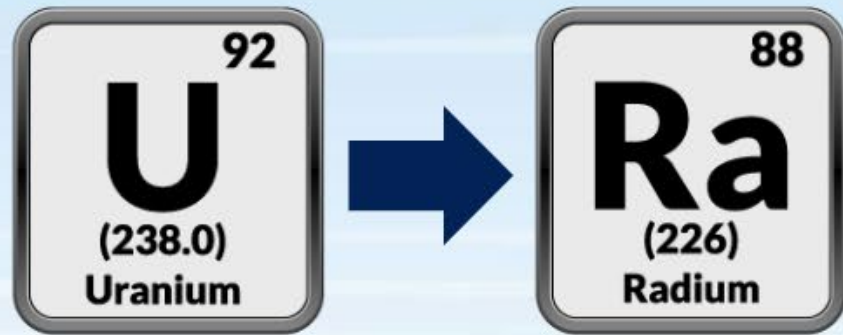
Where does **Radon** come from?

Radon is a natural substance.

Radon begins with the radioactive decay of uranium, a metal found in rocks and soil in most places in the United States.



The decay of **uranium** begins a long chain where eventually uranium changes into **radium**.



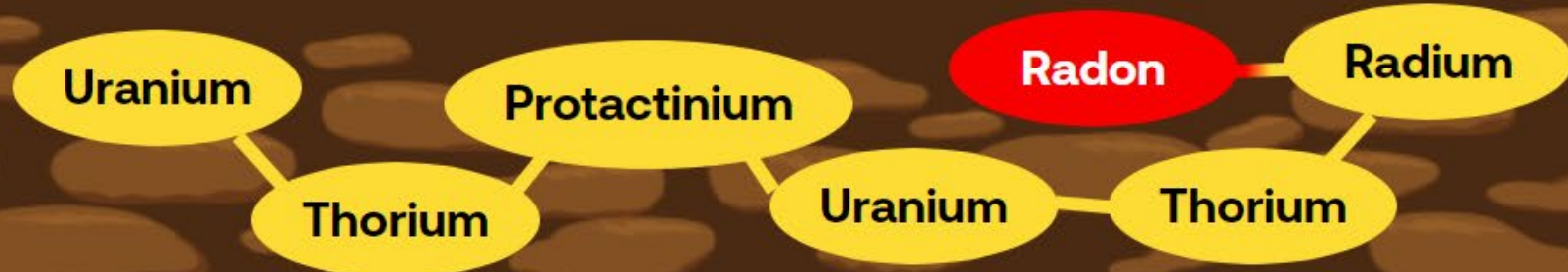
Reset



When **radium** decays, it turns into **radon**.



Reset



Radon is an invisible gas that finds its way out of the rocks and the soil...



[Reset](#)

**Radon** is coming out of the ground pretty much everywhere, and sometimes there's a house or other building in the way on radon's way out. **This can create a problem.**





# National Radon Health Advisory

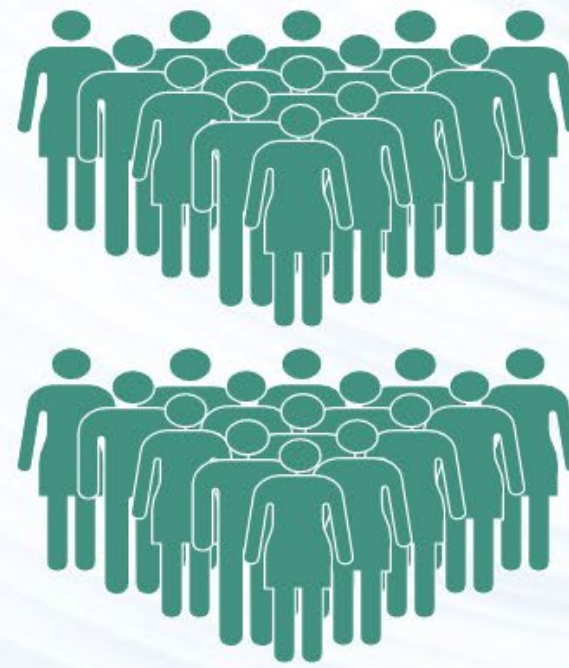


U.S. Surgeon General advises the public to test their homes for radon.

Indoor Radon gas is a national health problem. Radon causes thousands of deaths each year. Millions of homes have elevated Radon levels. Most homes should be tested for Radon. When elevated levels are confirmed, the problem should be corrected.

*~ U.S. Public Health Service*

# National Conclusions About Risk



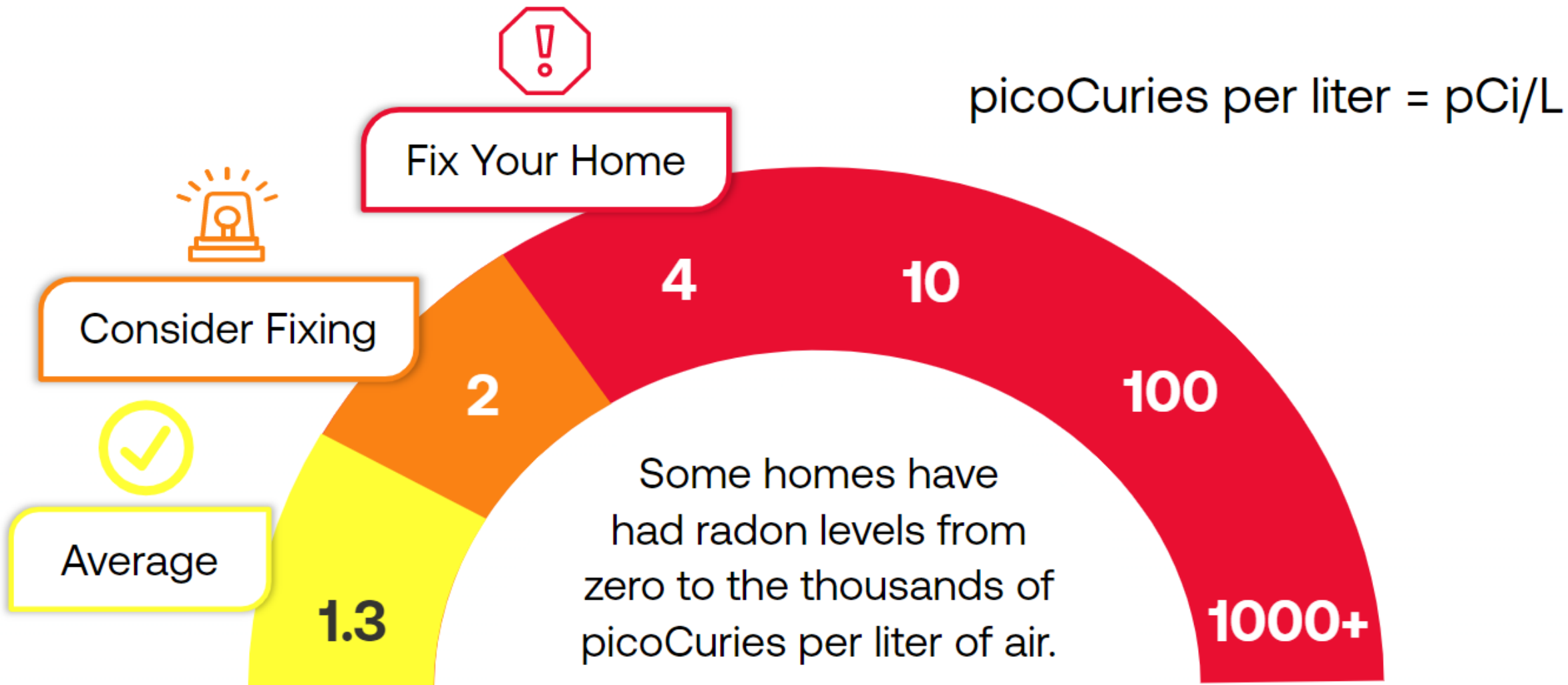
## QUICK FACT

Radon is responsible for about **21,000 lung cancer deaths** every year!

# Why Are We Concerned About Radon?

Cancer Type	Estimated Deaths in 2019
<b>LUNG CANCER</b>	<b>142,670</b>
Colorectal Cancer	51,020
Breast Cancer (Female)	41,760
Liver and Bile Duct	31,780
Prostate Cancer	31,620
Leukemia	22,840
<b>LUNG CANCER FROM RADON</b>	<b>21,000</b>
Non-Hodgkin Lymphoma	19,970
Bladder Cancer	17,670
Kidney and Renal Pelvis Cancer	14,770

# Radon Measures

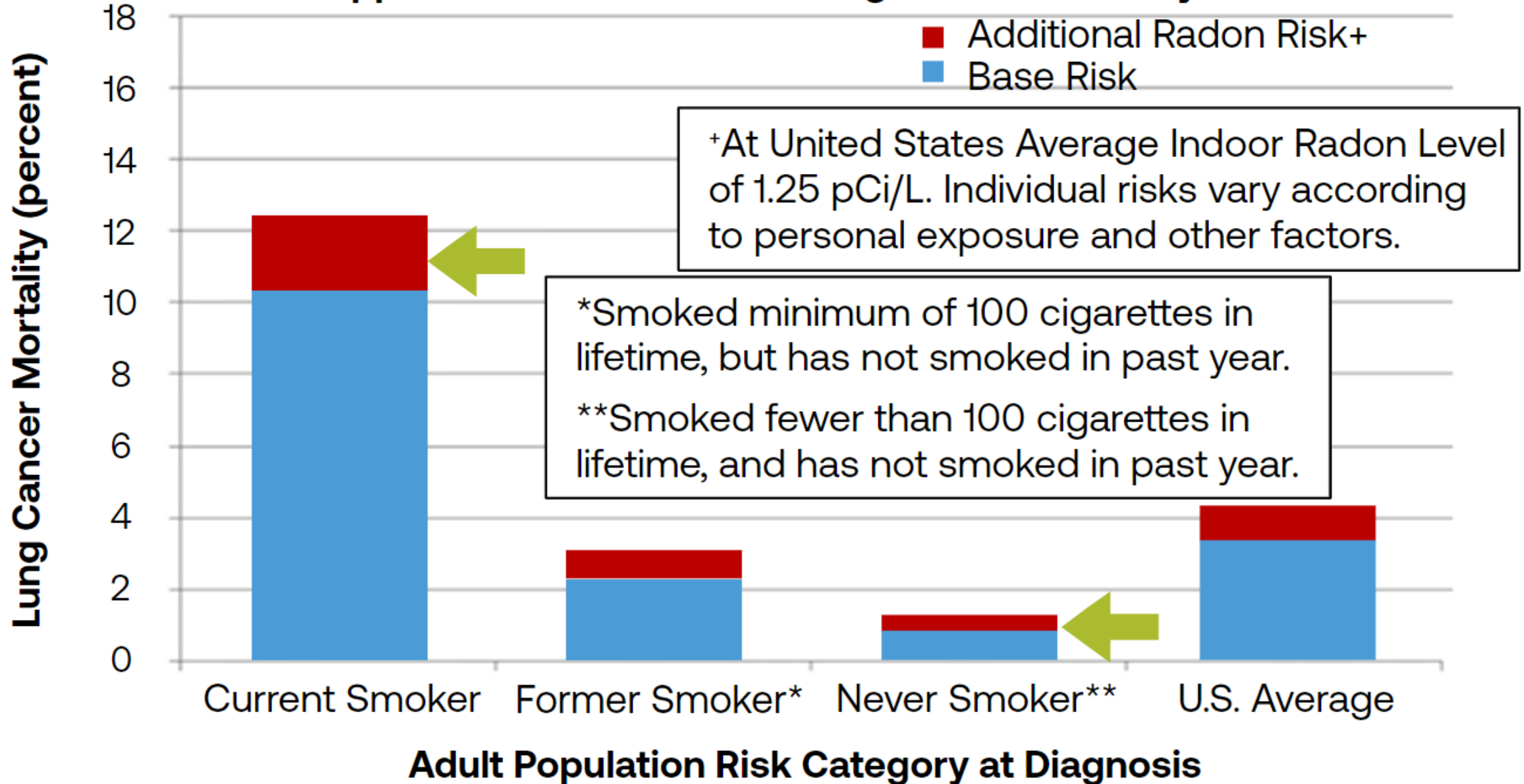


# Risk of Lung Cancer from Radon and Smoking



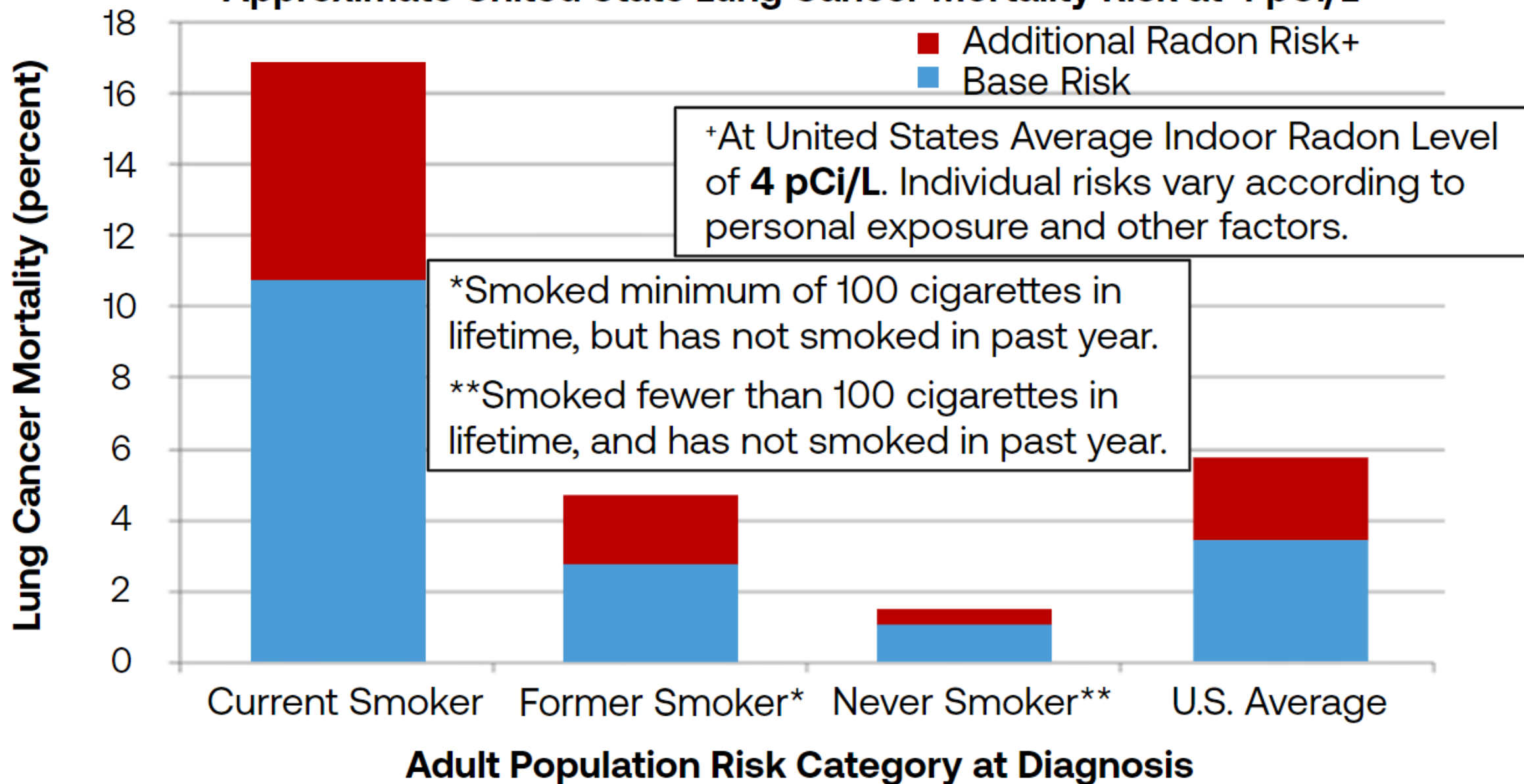
# Risk at Average Exposure Level

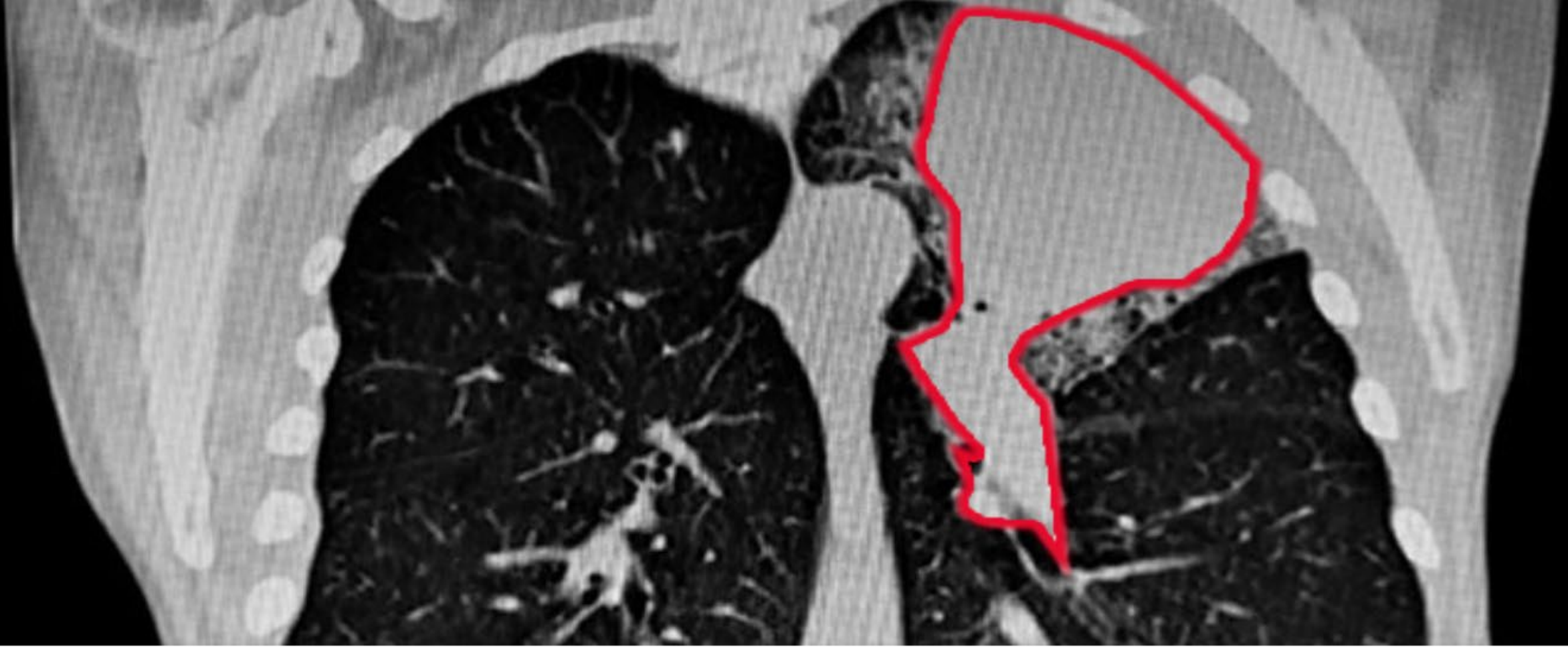
Approximate United State Lung Cancer Mortality Risk



# Risk at EPA Action Level

## Approximate United State Lung Cancer Mortality Risk at 4 pCi/L





### QUICK FACT

The **longer** the period of exposure and the **higher** the level of exposure, the **greater** a person's risk of developing **lung cancer**.



# Do You Have a Radon Problem? Test!

## Risks of Radon:

Radon is the number **two** leading cause of lung cancer, right after smoking.

Radon is the **leading** cause of lung cancer among people who have *never* smoked.

Radon **increases** the risk of developing lung cancer among smokers.

Radon is responsible for about **21,000 lung cancer deaths** every year.

Radon levels can vary **significantly** from one house to the next!

# Testing Options

Things to consider when selecting a test:



Perform an initial short-term screening test (usually 2 to 7 days).



Tests usually cost around \$20.00.



Click each card to learn what you need to know about radon testing options.

# Testing Options

## Online

Order test kits online.

See purchase options on American Lung website.



Lung.org

## Local

Check your local hardware store for short-term test kits.

## Professional

Use professionals in real estate transactions.

# Guidance for Home Buying and Selling

## Before Purchase

Test any home before purchase. The buyer and seller should arrange for testing to be done.



## Lowest Livable Level

Test the lowest *livable* level of the house - whether it's finished or not.



## Hire a Professional

Get an independent, professionally licensed and/or certified third party to test the house.

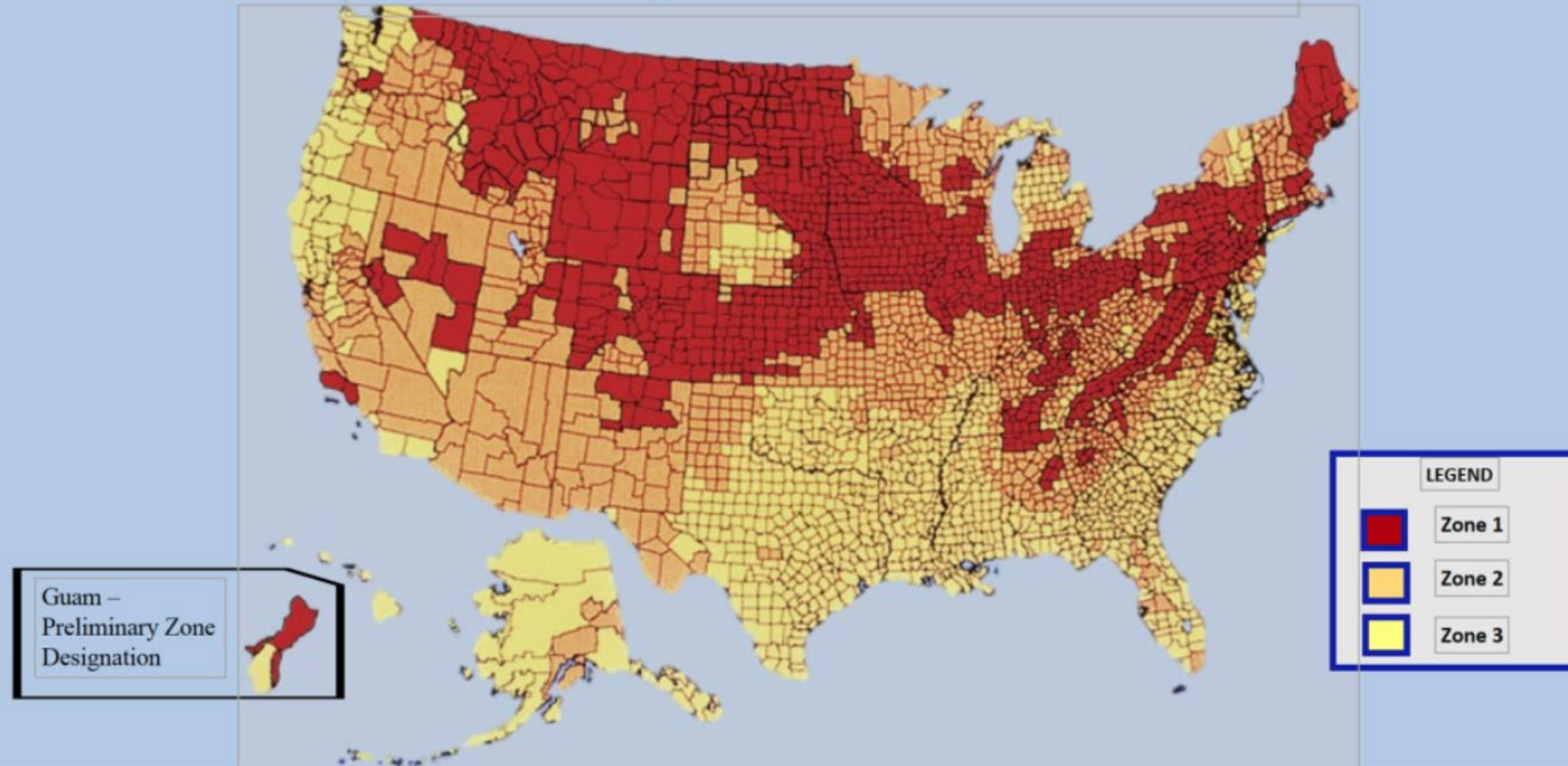


## Built In Features

If you are buying a new home, ask about radon-resistant features that are built in.

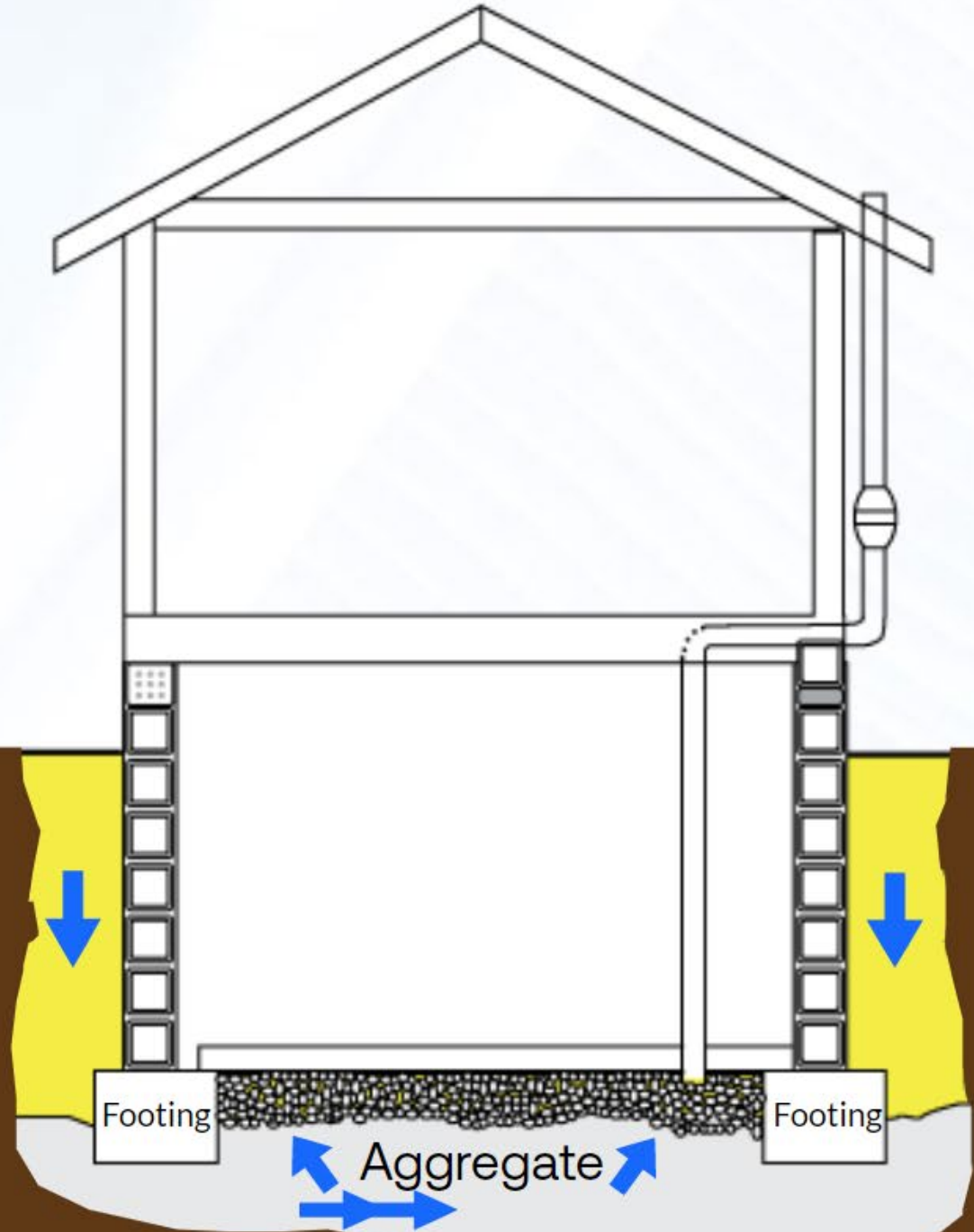


# EPA Map of Radon Zones



The Map of Radon Zones was developed in 1993 to identify areas of the U.S. with the potential for elevated indoor radon levels. The map is intended to help governments and other organizations target risk reduction activities and resources. The Map of Radon Zones should not be used to determine if individual homes need to be tested. No matter where you live, test your home for radon—it's easy and inexpensive. Fix your home if your radon level is 4 picocuries per liter (pCi/L) or higher. Consider fixing if your level is between 2 and 4 pCi/L.

The Map of Radon Zones was developed using data on indoor radon measurements, geology, aerial radioactivity, soil parameters, and foundation types. EPA recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential for a specific area.



# Radon Mitigation Systems



Your system should be installed by a **certified professional**.



Your system should be made of **durable materials**, with all parts clearly labeled.



The system should be **installed, maintained, and operated economically**.



Radon mitigation systems should be **quiet** and **unobtrusive**, but capable of **alerting** the user if the system is failing.



The system should be effective at **reducing** radon down to **less than 2 pCi/L**.

# 1 in 3 homes in Kentucky may have dangerous levels of radon





Lindi Campbell  
Kentucky Patient Advocate  
Breath of Hope Kentucky



*North Fighting For*

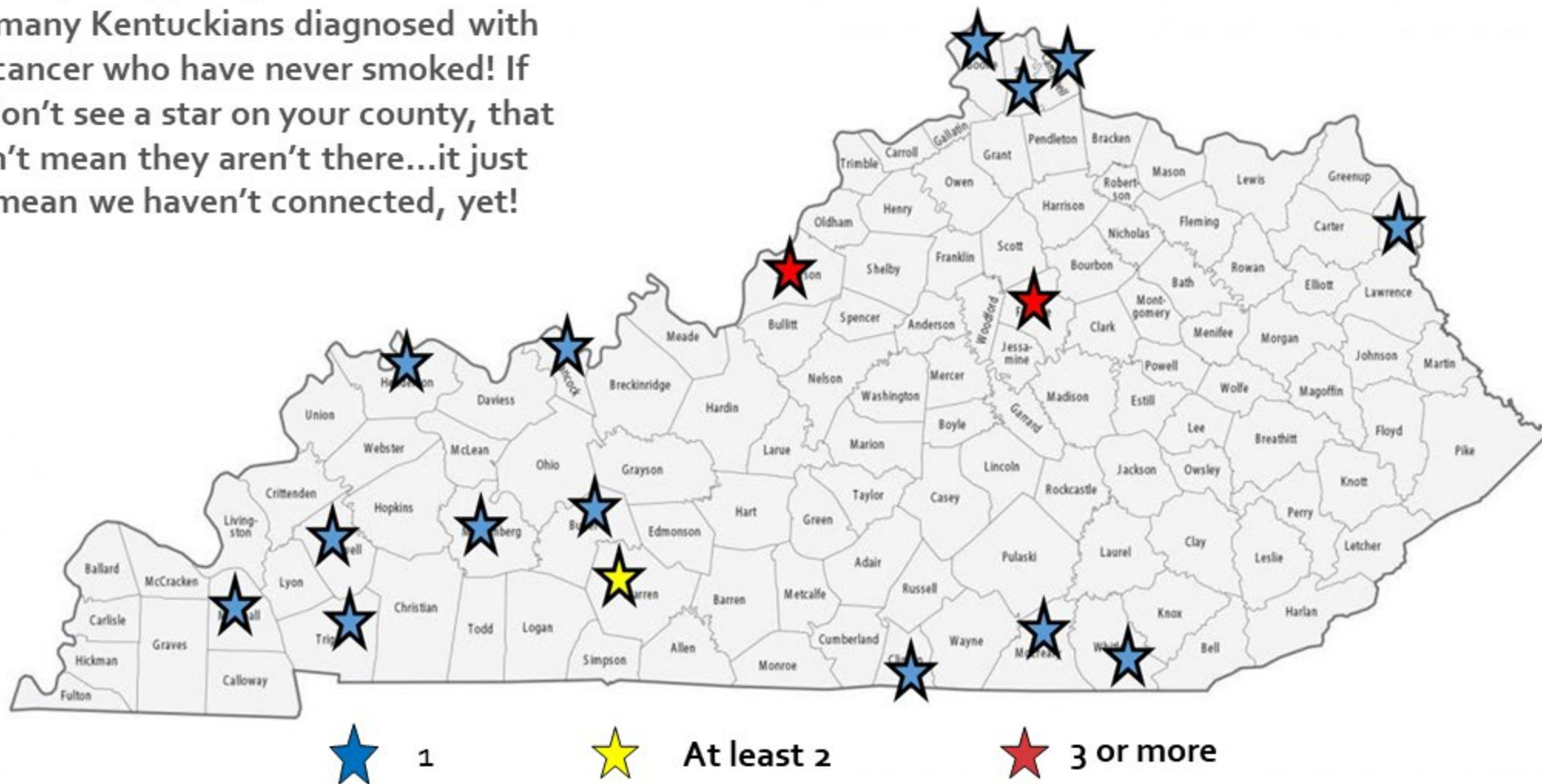


I AM A LIFELONG  
KENTUCKIAN

I NEVER PAID  
ATTENTION TO  
LUNG CANCER

BECAUSE I  
DIDN'T THINK IT  
COULD HAPPEN  
TO ME

Over the past 4 years, I have connected with many Kentuckians diagnosed with lung cancer who have never smoked! If you don't see a star on your county, that doesn't mean they aren't there...it just may mean we haven't connected, yet!



There are  
other causes of  
lung cancer  
besides  
smoking...

RADON is the  
#1 cause of  
lung cancer in  
never smokers

and this is my  
story.....



I have always been a very active and healthy adult.

In one day, my life  
turned upside down.

Exactly 2 months after turning  
53... life took a very unexpected  
turn. I woke up in recovery,  
alone and confused, to these  
words from my surgeon, "It was  
lung cancer, so we had to  
remove 2 lobes of your right  
lung, but we think we got it all."



I was the  
one who  
got lung  
cancer.



I was the  
baby of  
the family.



I never  
smoked.







**My childhood home since I was 1 year old.**



**This basement bedroom became mine just a few years after this photo of my 10th birthday party sleepover.**

SUITE 115  
LEXINGTON, KY 40513  
USA

### Alpha Track Radon Test

The following radon test was recently returned to RSSI for analysis.

This detector was exposed to a high level of radon for a period of time too long to be able to accurately analyze the detector. The radon level to which the detector was exposed may exceed the estimated result below.

Detector	Test Location	Test Address	Start Date	End Date	Estimated Result
415898			1/20/2022	8/16/2022	> 21.6 pCi/L

RSSI offers replacement detectors for \$18.00 each. If you choose to purchase a replacement, we recommend you expose it for

Results of a long-term radon test from the basement of my childhood home.

I AM.....



A MOM



A SISTER



A WIFE



A FRIEND



A DAUGHTER

WHAT HAPPENED TO ME  
COULD HAPPEN TO YOU OR  
SOMEONE YOU LOVE!

I am a strong individual.

Most who see me, don't SEE lung cancer.

But I could be ANYONE you know and love.

Our citizens need to be educated on the dangers of radon?

We Kentuckians deserve a safer space to breathe healthier so we can live longer, without the fear dying from lung cancer, even if we've never smoked?



I do all I can to advocate for this disease, because it's personal and my life...my future depends on it...but I can't do it alone. Kentuckians deserves better!



WE are Kentuckians, WE have never smoked, and WE are the faces of lung cancer in your Kentucky counties



LEND A HAND AND  
HELP US PROTECT  
OUR CITIZENS  
FROM

**RADON and  
LUNG CANCER?**

UN<sup>TE</sup>  
to FIGHT  
LUNG CANCER IN KENTUCKY

*With Family & Friends,  
Courage & Strength,  
I am  
A SURVIVOR*