



**Oregon State University**  
College of Public Health  
and Human Sciences



**Oregon State University  
Service-Learning Project in  
Collaboration with the  
Northwest Radon Coalition**



# Project Participants

## **Oregon State University Instructor**

Karen Elliott, PhD, MS, CHES

## **Oregon State University Undergrad Public Health Students**

Enrolled in H310 Health Field Experiences Fall 2021

## **Northwest Radon Coalition Members Involved**

Lawrence Belland – Just Radon

Tiffany Belser – American Lung Association

Johna Boulafentis – Nez Perce Tribe ERWM Air Quality Program

Joel Migliaccio – Environmental Works

Gretchen Stewart – Environmental Protection Agency, SEE

Annie Tucker – Cascade Radon

Steve Tucker – Cascade Radon

Duane West – 3R's Construction



# Project Purpose

Inspire public health students to spread awareness of the dangers of radon exposure and encourage testing to diverse groups of at risk and disadvantaged communities.

Provide Northwest Radon Coalition members opportunity to engage with public health students to share knowledge about radon and meet through individual and group meetings to offer project guidance and feedback on how to create a call to action.



## **Project Timeline (September- December)**

**Week 1: Students learned about radon and chose a population and toolkit resource to create.**

**Week 2: Students met with Coalition members through Zoom Meetings to ask questions about radon and receive initial feedback on project ideas.**

**Weeks 6-7: Students met with Coalition members through Zoom Meetings to share toolkit resource drafts and receive feedback.**

**Weeks 8-9: Students finalized toolkit resources.**

**Weeks 10-11: Students met with Coalition members through Zoom Meetings to present final toolkit resources.**



# Project Outcomes

## **Student Created Resources :**

Brochures, infographics, posters, videos, PowerPoint presentations, websites, and social media.

## **Populations and/or Audience Reached:**

Families, contractors, BIPOC community, OSU/Corvallis community, new home buyers, and childcare providers.

## **Mentorship and Additional Benefits:**

- The collaboration allowed the Northwest Radon Coalition to mentor students and receive new radon awareness resources to distribute widely.
- Students gained experience working with community partners around a public health issue and better understand and apply health risk communication skills.



# Student Projects



**Video:**  
**Addressing Radon Awareness Among Underserved Communities Created by**  
**Mateo**

**[Video Link](#)**



# Radon Lung Cancer In Oregon

---

## OSU Public Health

Radon is the second leading cause of lung cancer in the US

NOVEMBER 2021

1

Radon is the second leading cause of lung cancer in the US. Radon is a naturally occurring radioactive gas that is colorless, odorless, and tasteless. It is produced by the natural decay of uranium and thorium, which are found in rocks and soil. Radon enters homes through cracks and other openings in the foundation. It can accumulate to dangerous levels, especially in basements and lower floors. Radon exposure is a leading cause of lung cancer, and it is the second leading cause of lung cancer deaths in the United States. The good news is that radon can be tested for and mitigated. The Environmental Protection Agency (EPA) recommends that all homes be tested for radon, and if the levels are high, a radon mitigation system should be installed. Radon mitigation systems are designed to draw radon gas out of the home and vent it to the outdoors. They can be installed in a variety of ways, depending on the layout of the home and the location of the radon entry points. Radon mitigation systems are typically installed in the basement or crawlspace of a home. They consist of a pipe that is inserted into the ground and connected to a fan that draws radon gas out of the home. The fan is usually located in the attic or on the roof of the home. The pipe is then connected to the fan, and the radon gas is drawn out of the home and vented to the outdoors. Radon mitigation systems are a cost-effective way to reduce radon levels in a home. They can be installed by a professional or by a homeowner. The EPA provides a list of radon professionals who can be contacted for more information. Radon mitigation systems are a simple and effective way to protect your family from the dangers of radon. If you are concerned about radon in your home, contact a radon professional for more information.

A modern living room interior. A light gray sofa with wooden legs is the centerpiece, with a white dog lying on it. A gray throw blanket is draped over the left side. Behind the sofa is a large abstract painting in black, white, and gray. To the right of the sofa is a round, black wire basket ottoman. To the left is a small, round, black wire side table. On the right, a round, light-colored rattan side table holds a potted plant. The room has light wood flooring and a large, light-colored rug. The walls are white, and a small, round, black decorative object hangs on the wall to the right of the sofa.

1

Image: Follow The Flow, (December 11, 2019), Swedish and Scandinavian living room interior of modern apartment with grey sofa, design wooden commode, black table, lamp, abstract paintings on the wall, fireplace, open shelving on the ceiling, Home decor, stock photo, <https://www.shutterstock.com/image-photo/swedish-and-scandinavian-living-room-interior-of-modern-apartment-with-grey-sofa>

# What Is Radon?

Oregon and Washington have some of the highest levels of radon in the U.S.

- Radon is **known to cause lung cancer** in exposed individuals
- Radon is colorless, odorless, and tasteless gas that is prevalent in Oregon
- Radon is a product of natural decay of Uranium found withing the Earth
- Radon is radioactive and damages the DNA of the inner lining of the lungs
- There are **no safe levels of radon exposure** as radon becomes trapped in the lungs
- Radon exposure increases with time spent in radon rich environments and is **cumulative over a lifetime**



(

# The Great Indoors COVID-19 and Time Spent Inside



If your home or apartment has radon at any level, you are exposed

- COVID-19 has impacted all our lives including the time we spend at home
- Online school, working from home, and social distancing has increased the time we spend at home/ indoors (**increasing radon exposure**)
- The EPA, Oregon Radon Coalition, and Oregon Health Authority state the highest levels of radon exposure comes from time spent at home

You are not the only one at risk

- People are not the only ones impacted by radon; **pets can also develop lung cancer** from radon exposure.
- Pets spend the largest amount of time at home on average

**3**

3

A collage of various animals including a cow, a parrot, a cat, a dog, and a rabbit, illustrating the concept of biodiversity.

Figure 2

# Radon Exposure

"Radon causes 15000-22000 deaths per year (second leading cause of lung related death behind smoking)" (Building Radon Out, 2001)

## Radon Levels

- **You can easily and affordably test your home or apartment for radon**
- Homes should be tested for Radon levels. Home can be tested in as little as two days.
- Levels exceeding 4 picocuries per liter (pCi/L) or higher should seek Radon protection measures
- Homes that test below 4 picocuries per liter (pCi/L) are still at risk and steps can still be taken to reduce radon levels
- In most instances radon levels can be easily reduced

## Who to talk to?

- **National Radon Proficiency Program (NRPP) EXIT**  
Toll Free: (800) 269-4174 or (828) 348-0185  
Fax: (828) 890-4161  
Email: National Radon Proficiency Program ([info@nrpp.info](mailto:info@nrpp.info))
- **National Radon Safety Board (NRSB) EXIT**  
Toll Free: (866) 329-3474  
Fax: (914) 345-1169  
Email: National Radon Safety Board ([info@NRSB.org](mailto:info@NRSB.org))

4

# PowerPoint Presentation: Radon and Lung Cancer in Oregon Created by Anders



# Lung Cancer Caused by Radon

- Radon is the second leading cause of lung cancer in the US behind smoking
- Exposure to radon increases your chances of lung cancer over a lifetime
- Those who smoke are 8 times more likely to develop lung cancer
- Radon is considered the leading cause of environment related lung cancer
- **You can reduce your chances of lung cancer by simply testing for radon in your home**

"On average, 2,563 Oregonians develop lung and bronchial cancer every year with an average of 2,077 deaths per year due to these cancers." (Oregon Health Authority, 2011)

Cancer Mortality 2020	
Cancer Type	Estimated U.S. Deaths in 2020 <sup>a,b</sup>
1. Lung and Bronchus	135,720
2. Colon and Rectum	53,200
3. Pancreas	47,050
4. Breast	42,690
5. Prostate	33,330
6. Liver and Intrahepatic Bile Duct	30,160
7. Leukemia	23,100
<b>Radon-Induced Lung Cancer</b>	<b>21,100*</b>
8. Lymphoma (Combined Hodgkin & Non-Hodgkin)	20,910
9. Brain & Other Nervous System	18,020
10. Urinary Bladder	17,980
11. Esophagus	16,170
12. Kidney and Renal Pelvis	14,830
13. Ovary	13,940

Note: Conference of Radiation Control Program Directors, Inc. (2020, SEP). Reducing the Risk from Radon: Information and Interventions A Guide for Health Care Providers RadonLeaders.org. <http://www.radonleaders.org/sites/default/files/2020-11/HCPProvGuide%20Update%209-17-20.pdf>

5

## Property Owners

- Property owners in the state of Oregon are not required to test for radon
- Properties that are rented out are not always tested for radon
- There is no regulation for radon in Oregon this leaves **radon testing and radon safety in your hands!**

## Poverty And Radon A Social Rights Issue

- Many U.S. residents can not afford rent or the costs of installing radon prevention measures
- Apartments are not required to install radon prevention measures** even if a resident finds elevated levels of radon with a test
- This leaves many people with only the option to move if the property owner chooses not to install radon safety measures
- Moving is not always an option for many Americans

(E)

## How Does Radon Enter the Home?

- Radon can enter the home through cracks in the foundation, vents, and openings for pipes allow radon to enter any modern home
- Radon is a gas and fills all available space in each area
- Air pressure differences create a vacuum between the outside and the inside, this pulls radon into the home
- Radon levels can vary from day to day as well as from season to season
- Long term radon tests can help establish the prevalence of radon in a home
- **Short term test are available to determine immediate threat of radon exposure**

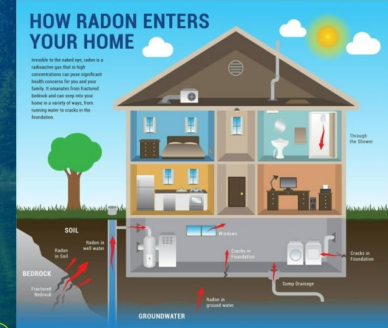
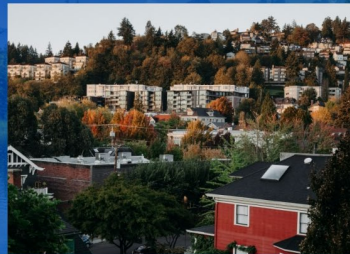


Figure 3  
Iradon. (2021). How Radon Enters Your Home. Iradon.com. <https://iradon.com/wp-content/uploads/radon-enters-home.jpg>

# Building Radon Free Homes

## Portland, OR, USA



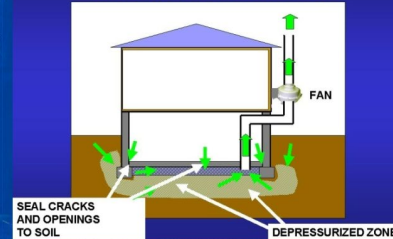
## Radon Safety Measures Are a Part of Sustainable Living

- Existing homes can be installed with radon safety measures
- Homes can be built from the Ground-up with radon safety measure
- These upgraded are in keeping with sustainable and energy efficient home building methods
- Homes built with radon safety measures are also more **resistant to mold and moisture build up**
- Moisture and mold can damage home longevity
- Homes built with radon safety in mind can **reduce radon in the home by 95%**
- Radon prevention is in keeping with the Oregonian way of greener, sustainable living

8

# Radon Reduction System

## RADON CONTROL FOR EXISTING HOUSES: SUB-SLAB DEPRESSURIZATION



Kansas State University. (n.d.). Radon Control in Existing Houses. [sosradon.org/https://sosradon.org/reducing-radon-in-your-home](https://sosradon.org/reducing-radon-in-your-home)

- Active soil depressurization (ASD) is an effective measure for radon reduction in the home
- Systems can be complex but are usually simple and vary based on home design
- These systems require little energy and do not increase the monthly cost of living in a noticeable way
- These systems use fans to draw radon from beneath the home and expel it into the surrounding air where it disperses harmlessly
- In outdoors environments the risk of radon is low to non-existent

9

# PowerPoint Presentation: Radon and Lung Cancer in Oregon Created by Anders

# RADON MITIGATION

An introductory guide to radon-mitigating  
techniques in construction.

**Video:**  
**Radon Mitigation**  
**Created by Meahgan**  
**[Video Link](#)**

## In this video:

What is radon?

Why should I be concerned?

How can I include radon-  
resistance in my construction?

How do I know if my construction  
is radon-resistant?

What do I do if it isn't?

How do I get started?



## Radon: What You Need to Know.

Radon is a radioactive gas that is naturally found in rocks, soil, and water.



Radon is a colorless, odorless, and tasteless gas.

The second-largest cause of lung cancer is radon.

### How Radon Enters Your Home:

- Solid-surface floor and wall cracks
- Interior wall cavities
- Joints in construction
- Suspended floor gaps
- The water supplies
- Service pipe gaps



## Radon: What You Need to Know.

In the United States, an estimated 1 in every 15 residences has elevated radon levels.

### Testing Your Home is the Most Crucial Step You Can Take.

- Local hardware stores have affordable tests that you can perform yourself.
- Or you can hire a qualified professional to help you with testing.

### How You Can Reduce Your Exposure to Radon:

- By opening windows, and using fans to circulate air, you can improve airflow in your home
- Stop smoking and make your home a no-smoking zone (Smoking raises the risk of lung cancer linked to radon).
- Try to seal floor and wall cracks with plaster, caulk, or other materials available for that purpose

### For More Information and Purchase of Radon Kit:



American Lung Association. (2021). Radon. American Lung Association. Retrieved November 2021, from <https://www.lung.org/clean-air/at-home/indoor-air-pollutants/radon>.  
Sources: U.S. Centers for Disease Control and Prevention. National Center for Environmental Health. (2021). Protect Yourself and Your Family from Radon. <https://www.cdc.gov/nceh/features/protect-home-radon/index.html>

## Radón: Lo Que Se Necesita Saber

Radón es un gas radiactivo que se encuentra naturalmente en las rocas, la tierra y el agua.



Radón es un gas incoloro, inodoro e insípido.

La segunda causa principal de cáncer de pulmón es el radón.

### El radón entra a su hogar de estas maneras:

- Suelo de superficie sólida y por grietas en la pared
- Caries de las paredes interior
- Juntas de construcción
- Huecos en suelo suspendido
- Las reservas de agua
- Huecos en la tubería de servicios



## Radón: Lo Que Se Necesita Saber

En los Estados Unidos, se estima que 1 de cada 15 residencias tiene niveles elevados de radón.

### Examinando su hogar es el paso más crucial que puede dar.

- Varias tiendas locales tienen pruebas económicas y fáciles de usar.
- O puede contratar a un profesional calificado para que conduzca las pruebas de radón.

### Maneras cómo puede reducir su exposición al radón:

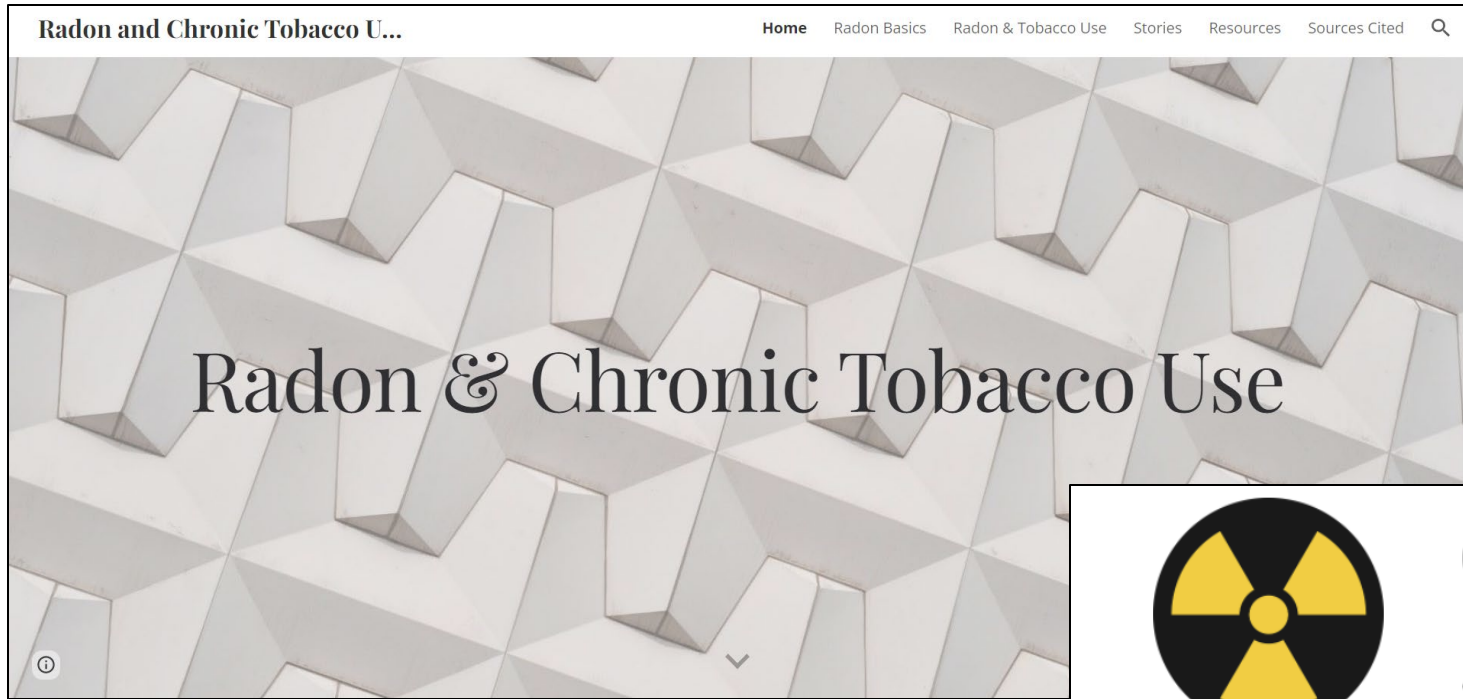
- Al abrir las ventanas y usar ventiladores para hacer circular el aire, puede mejorar el flujo de aire en su casa.
- No fumar y haciendo su casa una zona de no fumadores (fumar aumenta el riesgo de cáncer de pulmón conectado con el radón).
- Trate de sellar las grietas del piso y pared con yeso, o otros materiales disponibles para este propósito.

### Para Más Información y Compra de Kit de Radón:

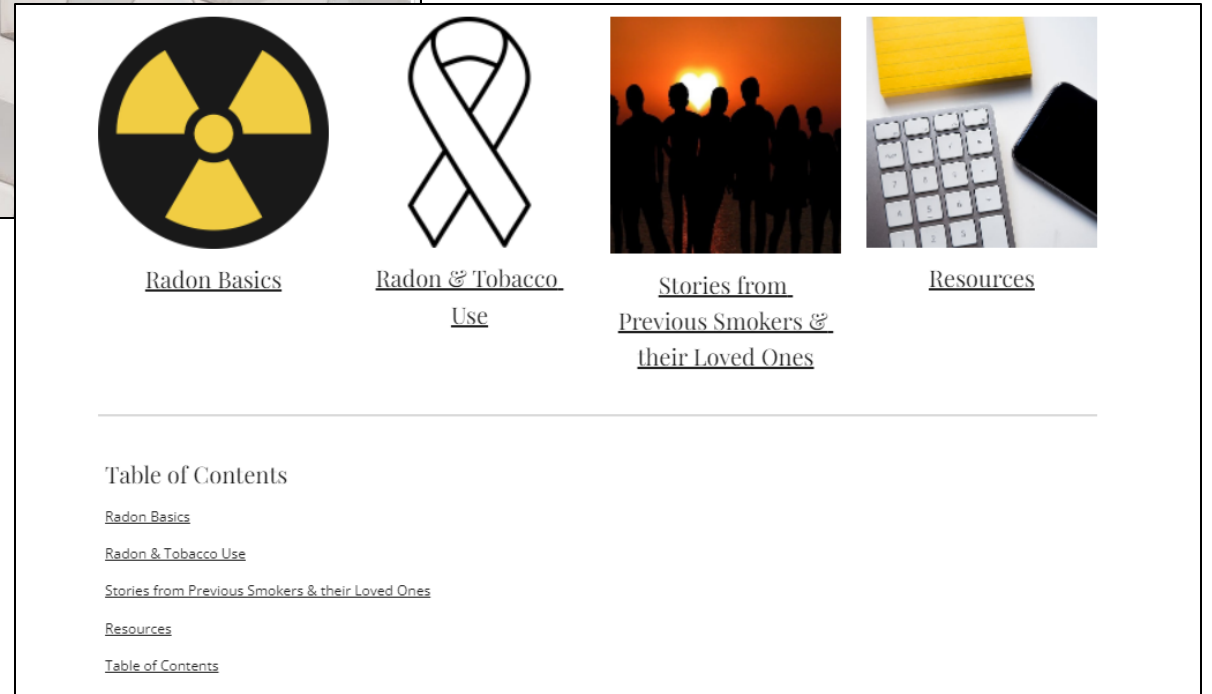


American Lung Association. (2021). Radon. American Lung Association. Retrieved November 2021, from <https://www.lung.org/clean-air/at-home/indoor-air-pollutants/radon>.  
Sources: U.S. Centers for Disease Control and Prevention. National Center for Environmental Health. (2021). Protect Yourself and Your Family from Radon. <https://www.cdc.gov/nceh/features/protect-home-radon/index.html>

Infographic in English and Spanish:  
Radon - What You Need to Know  
Created by Alin



**Website:**  
**Radon and Chronic Tobacco Use**  
**Created by Jordan**  
**Website Link**



# PROTECT YOUR LUNGS

RADON GAS AND CIGARETTES DON'T MIX

## WHAT IS RADON?

Radon is a naturally-occurring radioactive gas. The odorless and colorless gas can get trapped in homes and structures, putting residents at increased risk for lung cancer.<sup>3</sup> When inhaled, the elements resulting from radon decay bombard lung cells with radioactive particles, causing DNA damage and laying the foundation for poor lung pathology.<sup>4</sup> Overexposure to radon is the second leading cause of lung cancer in the United States.<sup>2</sup>

**85%**  
OF RADON-INDUCED  
LUNG CANCER DEATHS  
ARE SMOKERS<sup>4</sup>

## SMOKERS ARE AT RISK!

Smokers are at increased risk for lung cancer if exposed to radon! More than 85% of radon-induced lung cancer deaths are among smokers. Radon and smoking individually increase the risk for lung cancer, when you are exposed to both it's a recipe for disaster! According to the EPA 260 smokers could get cancer due to radon exposure versus 36 non smokers.<sup>2</sup>

## WHAT CAN YOU DO? TEST YOUR HOME

Testing your home will alert you to possible radon exposure, allowing you to secure your home. Radon is a "silent killer" if you will, invisible and odorless to the naked eye. Testing your home is the only way to ensure you are protected. Use the QR code to purchase a radon testing kit today!

## QUIT SMOKING

Quitting smoking will lower your risk of getting lung cancer exponentially- especially if you are exposed to radon. Quitting isn't easy, but it can save your life! Check out the QR code to the CDC's website for more information on quitting!



# REFERENCES

1. Centers for Disease Control and Prevention. (2021, June 21). How to quit smoking. Centers for Disease Control and Prevention. Retrieved November 19, 2021, from <https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/index.html>.
2. Environmental Protection Agency. (n.d.). Health Risk of Radon. EPA. Retrieved November 19, 2021, from <https://www.epa.gov/radon/health-risk-radon>.
3. Environmental Protection Agency. (n.d.). What is Radon Gas? Is it Dangerous? EPA. Retrieved November 19, 2021, from <https://www.epa.gov/radiation/what-radon-gas-it-dangerous>.
4. Lantz, P. M., Mendez, D., & Philbert, M. A. (2013, March). Radon, smoking, and lung cancer: The need to refocus Radon Control Policy. American journal of public health. Retrieved November 19, 2021, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3673501/>.
5. Product details. Fight For Air Climb | American Lung Association. (n.d.). Retrieved November 19, 2021, from [https://action.lung.org/site/Ecommerce/195100461?VIEW\\_PRODUCT=true&product\\_id=2421&store\\_id=34302&\\_ga=2.194811629.131402105.1637215965-399319287.1637215965](https://action.lung.org/site/Ecommerce/195100461?VIEW_PRODUCT=true&product_id=2421&store_id=34302&_ga=2.194811629.131402105.1637215965-399319287.1637215965).

Infographic:  
Project Your Lungs  
Created by Grace





# Radon: The Silent Killer

Everyday we protect our children from the seeable threats and dangers in our world. What are you doing to protect them from the dangers that can't be seen?

## Infographic: Radon - The Silent Killer Created by Zoey

A beginner's guide to

### RADON: What is it, and Why is it a danger?



Radon is a naturally-occurring radioactive gas that can cause lung cancer. Radon gas is inert, colorless and odorless (United States Environmental Protection Agency 2021).

#### What does that have to do with my family?

Most radon exposure occurs inside homes, schools and workplaces. Radon gas becomes trapped indoors after it enters buildings through cracks and other holes in the foundation (United States Environmental Protection Agency 2021).

21,000  
DIE EVERY YEAR

From radon-related lung cancer. Only smoking causes more lung cancer deaths. (United States Environmental Protection Agency 2021).



Portland has a **BIG** problem



Radon levels in Portland are **DOUBLE** the national average and it is estimated that **1 IN 4** homes in the Portland area have levels of radon that are **UNSAFE** (Learn 2018).

### What can be done?



Contact local contractors for radon tests



Buy your own test online: use the QR code below!



Educate friends and family about the dangers of radon



If testing confirms a dangerous amount of radon, take the next steps to have it removed. For more information, use this QR code!



Update your home to meet the standards that prevent excess radon



Fight the silent killer and protect your loved ones from radon today!



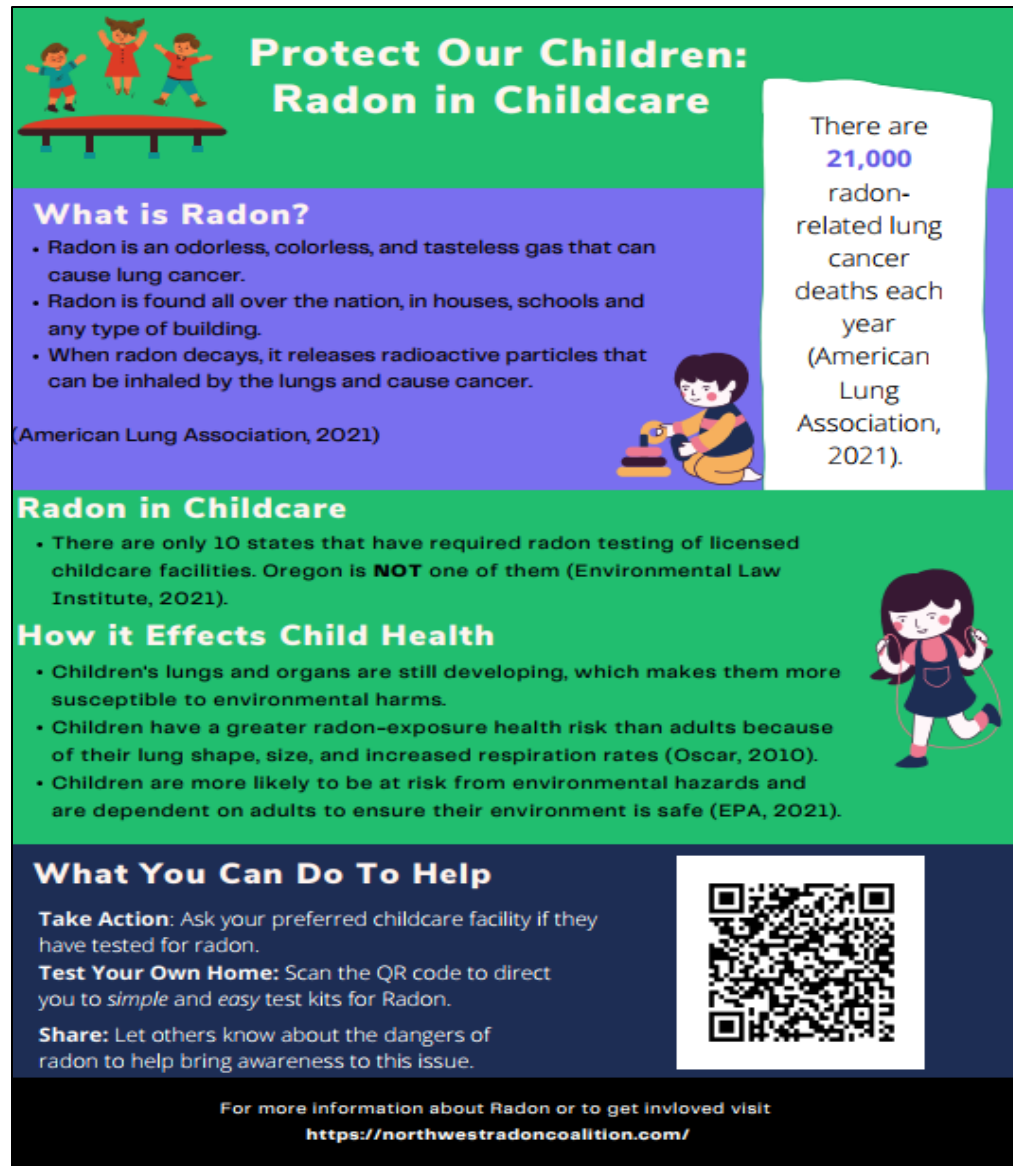
### References

Cascade Radon. (2021). Cascade radon: Testing. Cascade Radon | Testing. Retrieved November 15, 2021, from [https://cascaderadon.com/testing/?gclid=CjwKCAiAp8IMBhAqEiwAJb94z5\\_Kj\\_QlqzBxbYzPjUZkgZCQy8BYBQu-kFSIXY7Xb1E10N-g4FhX2xoC\\_3YQAvD\\_BwE](https://cascaderadon.com/testing/?gclid=CjwKCAiAp8IMBhAqEiwAJb94z5_Kj_QlqzBxbYzPjUZkgZCQy8BYBQu-kFSIXY7Xb1E10N-g4FhX2xoC_3YQAvD_BwE).

Happy family clipart. Clipart World. (n.d.). Retrieved November 15, 2021, from <https://clipart.world/family-clipart/happy-family-clipart/>.

Scott Learn, T. O. (2013, January 24). New Radon numbers highlight Portland-Area Health Risks. oregonlive. Retrieved November 15, 2021, from [https://www.oregonlive.com/environment/2013/01/new\\_radon\\_numbers\\_highlight\\_po.html](https://www.oregonlive.com/environment/2013/01/new_radon_numbers_highlight_po.html).

United States Environmental Protection Agency. (2021). What is Radon Gas? Is it Dangerous? EPA. Retrieved November 15, 2021, from <https://www.epa.gov/radiation/what-radon-gas-it-dangerous>.



## Protect Our Children: Radon in Childcare

There are **21,000** radon-related lung cancer deaths each year (American Lung Association, 2021).

### What is Radon?

- Radon is an odorless, colorless, and tasteless gas that can cause lung cancer.
- Radon is found all over the nation, in houses, schools and any type of building.
- When radon decays, it releases radioactive particles that can be inhaled by the lungs and cause cancer.

(American Lung Association, 2021)

### Radon in Childcare

- There are only 10 states that have required radon testing of licensed childcare facilities. Oregon is **NOT** one of them (Environmental Law Institute, 2021).

### How it Effects Child Health


- Children's lungs and organs are still developing, which makes them more susceptible to environmental harms.
- Children have a greater radon-exposure health risk than adults because of their lung shape, size, and increased respiration rates (Oscar, 2010).
- Children are more likely to be at risk from environmental hazards and are dependent on adults to ensure their environment is safe (EPA, 2021).

### What You Can Do To Help

**Take Action:** Ask your preferred childcare facility if they have tested for radon.

**Test Your Own Home:** Scan the QR code to direct you to *simple and easy* test kits for Radon.

**Share:** Let others know about the dangers of radon to help bring awareness to this issue.



For more information about Radon or to get involved visit  
<https://northwestradoncoalition.com/>

Infographic:  
Protect Our Children - Radon in Childcare  
Created by Hannah

## References

American Lung Association. (2021). Radon. American Lung Association. Retrieved November 8, 2021, from <https://www.lung.org/clean-air/at-home/indoor-air-pollutants/radon>.

Environmental Law Institute . (2021). (rep.). Radon in Childcare (Ser. Review of State Policies ). Washington , D.C.: Environmental Law Institute .


Environmental Protection Agency . (2021). Children Are Not Little Adults! EPA. Retrieved November 29, 2021, from <https://www.epa.gov/children/children-are-not-little-adults>.

Poku, B., & Hussaini, S. (2021, May 31). Review of Radon in child care centers: An examination of state laws and regulations in the United States. GSC Advanced Research and Reviews. Retrieved 2021, from <https://gsconlinepress.com/journals/gscarr/content/radon-child-care-centers-examination-state-laws-and-regulations-united-states>.

Tarragó Oscar. (2010). Who is at Risk of Radon Exposure? In Radon toxicity (pp. 1-66). essay, Agency for Toxic Substances and Disease Registry. Retrieved November 8, 2021, from <https://www.atsdr.cdc.gov/csem/csem.html#:~:text=Children%20also%20have%20breathing%20rates%20faster%20than%20those,getting%20lung%20cancer%20increases%20at%20least%2020%20times>.

Is radon in your air?

Long Term exposure can increase chances of developing **lung cancer**



Purchase your at-home test kit here

**References**

ACS. (2015). Radon and Cancer. *American Cancer Society*. Retrieved from: <https://www.cancer.org/cancer/causes/radiation-exposure/radon.html>

CDC. (2021). Radon. *Center for Disease Control and Prevention*. Retrieved from: <https://www.cdc.gov/radon/index.html>

# Radon Testing and the Effects on Childhood Health

Schyler Roberts  
H310

**What is Radon?**


It is a colorless, odorless, naturally occurring radioactive gas. (CDC, 2021)

Can be found in any type of building including:  
**Homes, offices & schools**

Naturally occurring in rock, soil, water & air

2nd leading cause of **lung cancer** (ACS, 2015)

more information on testing



SCAN ME

Has your child's daycare been tested for radon lately?

States that require radon testing in child care centers:  
CO, CT, FL, ID, IL, IA, MD, MI, NJ, NY, RI

Due to your child's higher respiration rate, and quicker cell division they are at a **greater risk of developing respiratory illnesses** (CDC, 2021)

**When to test**

- Every 2 years
- After any lifestyle changes
- After any renovations

Best time of year to test is in the **fall & winter**

Protect your child's health where they **GROW LEARN & PLAY**

**Infographic:**

**Radon Testing and the Effects on Childhood Health**

**Created by Schyler**

# Radon In Child Care?

## What is Radon?

The naturally-occurring radioactive gas radon is known to cause lung cancer in humans. Radon gas is inert, odorless, and colorless. Trace amounts of radon are naturally found in the atmosphere. In general, radon is not a health risk outside, since it disperses rapidly. The vast majority of radon exposure occurs inside homes, schools, and workplaces. After entering buildings through cracks and other holes in the foundation, radon gas becomes trapped indoors. Indoor radon can be controlled and managed with proven, cost-effective techniques (US EPA, OAR, 2019).



## The Risks of Living With Radon?

Radon exposure at homes is believed to cause 21,000 cases of lung cancer annually. Although every individual is exposed to radon, not everyone reacts to prolonged exposure in the same way. Radon poisoning or other health conditions may be more common in certain populations. Young children and adolescents

are most susceptible to radiation as well as the unborn child of a pregnant woman.

## How Does Radon Affect Children?

Numerous studies show the vulnerability of children to radon exposure. As they develop faster, their lungs have a greater sensitivity to indoor air quality. Furthermore, children have faster breathing rates, which almost doubles their risk of developing lung cancer. Children whose homes also contain tobacco smoke have at least a 20-fold increased risk of developing lung cancer. A child's or teenager's body grows rapidly, so their cells are more sensitive to radiation. Radiation effects take years to develop, so children exposed to elevated levels of radon early in life are more likely to develop radon-related illnesses later in life.

2

## Taking Care of Your Children: How Do You Protect Them from Radon?

Radon testing should be the first step you take. In most household situations, this is where people spend the most time. Hire a professional to install a radon-reduction system if your test results are above the recommended action level.

### Radon Causes Lung Cancer.

Ask your school principal or child care program director to:

- ☐ Test your school
- ☐ Fix the building if it has a high radon level



Additionally, if your child attends daycare or school, ask if the building was tested for radon. Often, daycares are located in basements of buildings, and basement rooms have higher radon levels than the rest of the building. The United States Environmental Protection Agency (EPA) recommends that schools test for radon regularly (Radon and Children - How does Radon Affect Children's Health, n.d.).

Lastly, make sure your children are educated about radon. To make educated choices later in life, they should have a basic understanding of environmental radiation.

## Radon In Schools And Daycares.



Schools can implement an IAQ (Indoor Air Quality) management program to evaluate radon levels and reduce risks for occupants (US EPA, 2014). In US EPA's IAQ Design Tools for Schools, you can learn how to control radon levels in renovation and construction projects by scanning this QR code for more information.



3

## References:

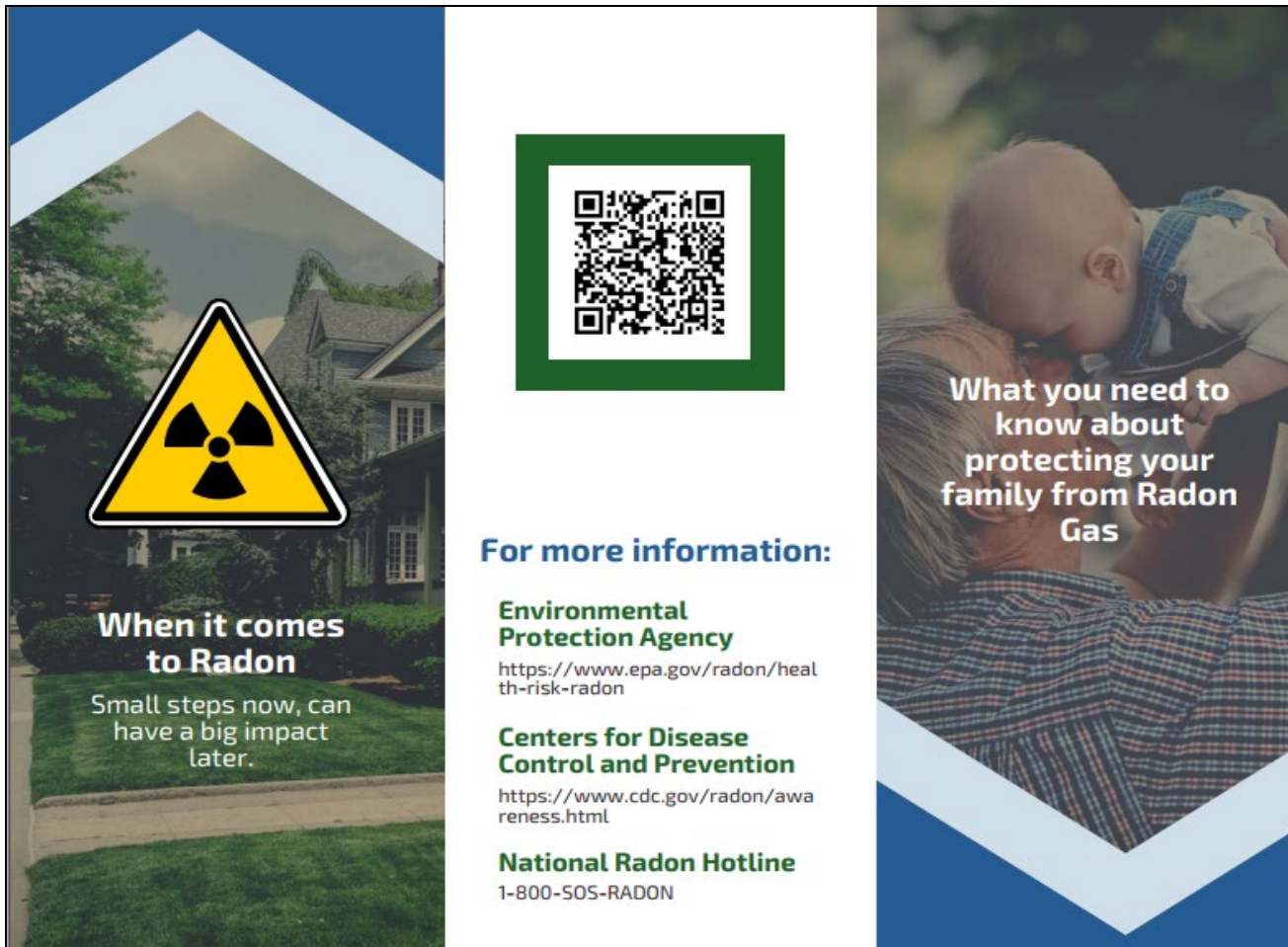
Radon and Children - How does Radon Affect Children's Health. (n.d.). <https://www.ohiorm.com/effects-of-radon-in-the-home/radon-and-children/>

US EPA, O. (2014, October 17). *Indoor Air Quality Design Tools for Schools*. [Www.epa.gov. https://www.epa.gov/iaq-schools/indoor-air-quality-design-tools-schools](https://www.epa.gov/iaq-schools/indoor-air-quality-design-tools-schools)

US EPA, OAR. (2019, February 11). *What is radon gas? Is it dangerous?* | US EPA. [US EPA. https://www.epa.gov/radiation/what-radon-gas-it-dangerous](https://www.epa.gov/radiation/what-radon-gas-it-dangerous)

**Infographic:**  
**Radon in Child**  
**Care**  
**Created by**  
**Isabell**





**When it comes to Radon**  
Small steps now, can have a big impact later.

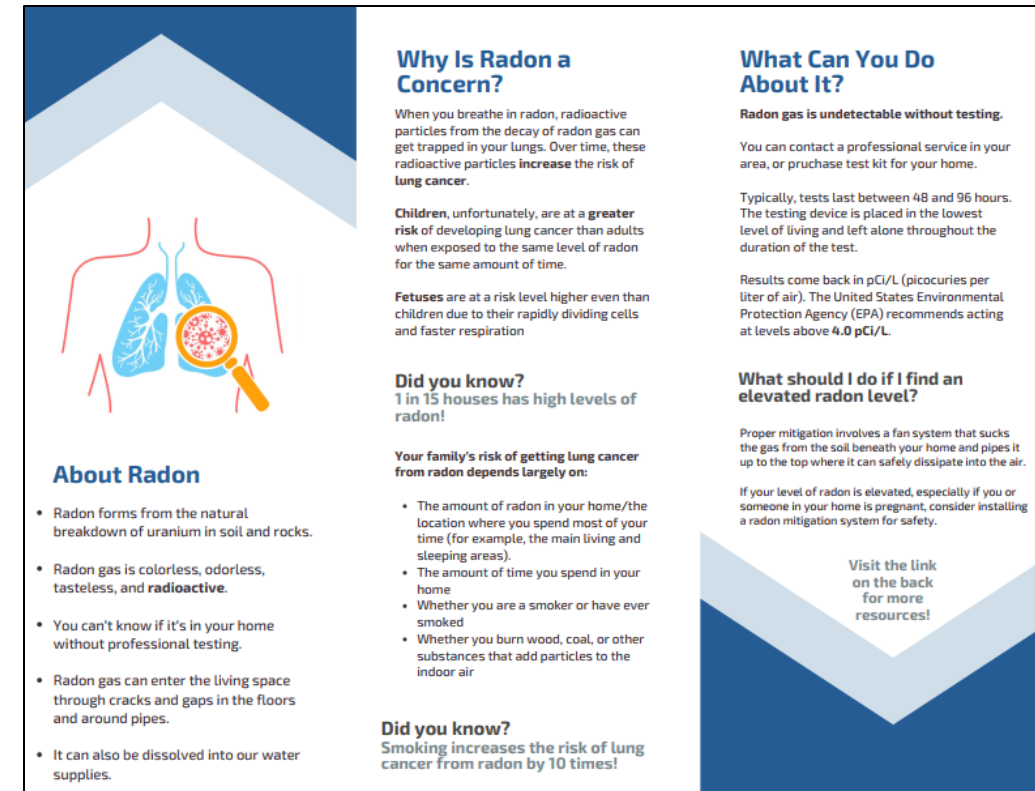
**What you need to know about protecting your family from Radon Gas**

**For more information:**

**Environmental Protection Agency**  
<https://www.epa.gov/radon/health-risk-radon>

**Centers for Disease Control and Prevention**  
<https://www.cdc.gov/radon/awareness.html>

**National Radon Hotline**  
1-800-505-RADON



**Why Is Radon a Concern?**

When you breathe in radon, radioactive particles from the decay of radon gas can get trapped in your lungs. Over time, these radioactive particles **increase** the risk of **lung cancer**.

**Children**, unfortunately, are at a **greater risk** of developing lung cancer than adults when exposed to the same level of radon for the same amount of time.

**Fetuses** are at a risk level higher even than children due to their rapidly dividing cells and faster respiration.

**Did you know?**  
1 in 15 houses has high levels of radon!

**Your family's risk of getting lung cancer from radon depends largely on:**

- The amount of radon in your home/the location where you spend most of your time (for example, the main living and sleeping areas).
- The amount of time you spend in your home
- Whether you are a smoker or have ever smoked
- Whether you burn wood, coal, or other substances that add particles to the indoor air

**Did you know?**  
Smoking increases the risk of lung cancer from radon by 10 times!

**About Radon**

- Radon forms from the natural breakdown of uranium in soil and rocks.
- Radon gas is colorless, odorless, tasteless, and **radioactive**.
- You can't know if it's in your home without professional testing.
- Radon gas can enter the living space through cracks and gaps in the floors and around pipes.
- It can also be dissolved into our water supplies.

**What Can You Do About It?**

**Radon gas is undetectable without testing.**

You can contact a professional service in your area, or purchase test kit for your home.

Typically, tests last between 48 and 96 hours. The testing device is placed in the lowest level of living and left alone throughout the duration of the test.

Results come back in pCi/L (picocuries per liter of air). The United States Environmental Protection Agency (EPA) recommends acting at levels above 4.0 pCi/L.

**What should I do if I find an elevated radon level?**

Proper mitigation involves a fan system that sucks the gas from the soil beneath your home and pipes it up to the top where it can safely dissipate into the air.

If your level of radon is elevated, especially if you or someone in your home is pregnant, consider installing a radon mitigation system for safety.

Visit the link on the back for more resources!

**Brochure:**  
**What You Need to Know about Protecting Your Family From Radon Gas**  
**Created by Tasha**



### Important information about Radon

- Radon can build up in enclosed spaces through cracks in the foundation or other openings in a building. (4)
- Radon is present almost everywhere indoors and outdoors how lower levels can be harmless, however when an individual is exposed to high levels of Radon it can become dangerous and lead to lung cancer. (1)
- Radon is responsible for about 21,000 lung cancer deaths every year. (5)



### How to test your home for Radon

- 1) You can get an affordable kit from a hardware store. Or you can order one by calling 1-800-SOS-RADON (1-800-767-7236) or going to the National Radon Program Services website (<http://sosradon.org/test-kits>). (3)
- 2) Hire a professional- the website below provides a list of technician on staff who has been certified by the National Radon Proficiency Program or the National Radon Safety Board (6)

<https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/HEALTHYNEIGHBORHOODS/RADONGAS/Pages/measurement.aspx> (6)

Additional resources outside of Oregon are available.

### As a Senior could you be at risk for Radon exposure?

Radon is a colorless and odorless gas that can occur in any home from decay of elements in rocks and soil. (2)



Seniors often live in homes that have been owned or lived in for long periods of time which leads to higher risk to Radon exposure. (2)

### Health Risk of Radon exposure

Radon is the second biggest cause of lung cancer after cigarette smoking. (5)

There are no immediate symptoms of radon exposure. (2)

Sources:  
1. Story map series. [esri.com](https://www.esri.com). (n.d.). Retrieved November 18, 2021, from <https://www.esri.com/esri.com/arcgis/story/index.html?appid=767016085c40401af4805c3252877c>.  
2. Casa Companion: Homecare Solutions. (2019, January 10). What seniors need to know about radon. Casa Companion Homecare Solutions. Retrieved November 18, 2021, from <https://www.casacompanionhomecare.com/caregivers-101/what-seniors-need-to-know-about-radon/>.  
3. Radon fact sheet - centers for disease control and prevention. (n.d.). Retrieved November 18, 2021, from [https://www.cdc.gov/radon/toolkit/images/fact\\_sheets/radon\\_fact\\_sheet.pdf](https://www.cdc.gov/radon/toolkit/images/fact_sheets/radon_fact_sheet.pdf).  
4. Radon levels. National Radon Defense Admin. (n.d.). Retrieved November 18, 2021, from <https://www.nationalradondefense.com/radon-information/radonlevels.html>.  
5. Environmental Protection Agency. (n.d.). EPA. Retrieved November 18, 2021, from <https://www.epa.gov/radon/health-risk-radon>.  
6. Measurement comparison. Oregon Health Authority - Measurement Companies - Radon Gas - State of Oregon. (n.d.). Retrieved November 18, 2021, from <https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/HEALTHYNEIGHBORHOODS/RADONGAS/Pages/measurement.aspx>.  
7. Centers for Disease Control and Prevention. (2021, January 4). Protect yourself and your family from radon. Centers for Disease Control and Prevention. Retrieved November 18, 2021, from <https://www.cdc.gov/radon/focus-on/protect-home-radon/index.html>.

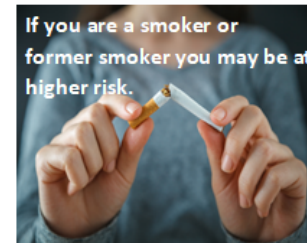
### Radon Levels

A picocurie per liter measures how many picocuries of radon can be found in one liter of air. (4)

Anything higher than 4 picocuries requires mitigation. (3)

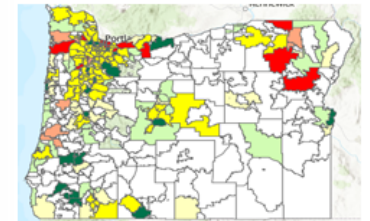
Anything between 2 and 4 should be considered. (3)

If you are a smoker or former smoker you may be at higher risk.



### Higher risk locations

The map of Oregon below indicates areas in Oregon and there Radon exposure level: High = Red Moderate= Yellow Low= Green Insufficient Data = white (1)



### Take Action!



- Air purifiers
- Stop smoking
- Test your home
- Hire a professional
- For more information on how to protect yourself visit: [Protect Yourself and Your Family from Radon | NCEH | CDC](#) (7)

Brochure:  
As a Senior Could You Be at Risk for Radon Exposure?  
Created by Nora

### Please Test Your Home


Testing Is Easy!

Tests Available At The American Lung Association:


Please Help Prevent Lung Cancer, Tell Friends and Family About Radon

References




### More Information:


Northwest Radon Coalition




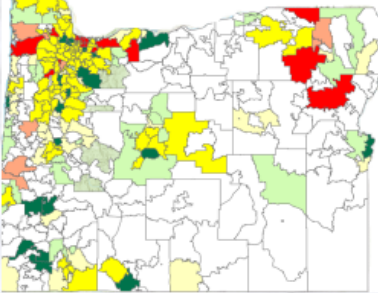
CDC Radon Website



Radon Mitigation




Oregon.gov Radon, Map, and Test Kit Information

To learn more about the map and check radon levels by zip code use the Oregon.gov website above.

## MOVING SOON?

## THOUGHT ABOUT RADON GAS?



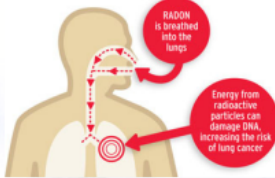
### Radon Is The Second Leading Cause Of Lung Cancer In The U.S.<sup>1</sup>

### What Is Radon Gas?

Radon is an odorless, tasteless, and colorless gas that forms from the breakdown of uranium, radium and thorium found naturally in soil.<sup>1</sup>

### How Is It Harmful?

Radon enters homes through cracks in floors, walls, foundations and other openings. When inhaled, radon can damage the lungs and eventually lead to lung cancer. If you are a smoker your cancer risk from radon is higher.<sup>2</sup>



### Is Radon Found In Oregon?

Radon is found in Oregon, Washington and all 50 states.<sup>3</sup> 1 in 15 homes have high radon levels.<sup>4</sup>

### Is My Apartment Complex Required To Test?

Some properties are required to test but most are not. Start a friendly conversation with your property manager to find out if they conduct testing, and if so ask, how often and what levels have been found.

### How Can I Test For Radon?

Testing is simple! Short-term, long-term and professional radon testing is available. Short and long term tests can be purchased at home supply stores or even through Amazon for around \$15.


Be sure to follow test kit instructions closely and conduct tests every two years. **Some Oregon residents qualify for free test kits (see back).**

### What If The Test Finds Radon? Can It Be Fixed?

Radon is found everywhere but it is important to ensure levels are below the EPA recommended 4 pCi/L.<sup>5</sup> Lowering radon to a safe level is possible and relatively affordable. Consider fixing properties with radon levels between 2-4 pCi/L.

If your test comes back with results in this range talk to your property manager about radon and radon mitigation.

### More Information On Radon And Radon Mitigation Can Be Found On The Back.



Brochure:

# Moving Soon? Thought About Radon Gas?

Created by Kyle

# WELCOME HOME

TEST YOUR HOME FOR RADON FIRST!

- The EPA & Surgeon General's office recommend testing your home.
- Radon is the second-leading cause of lung cancer
- It's odorless, colorless, and tasteless
- Trapped Radon can damage lung tissue and alter DNA of the cells
- 15% of homes have unsafe levels of Radon
- If Radon levels are high, it can be mitigated with sealing, house/room pressurization and ventilation

Contact 1-800-  
SOSRADON for  
more information



**Poster:**

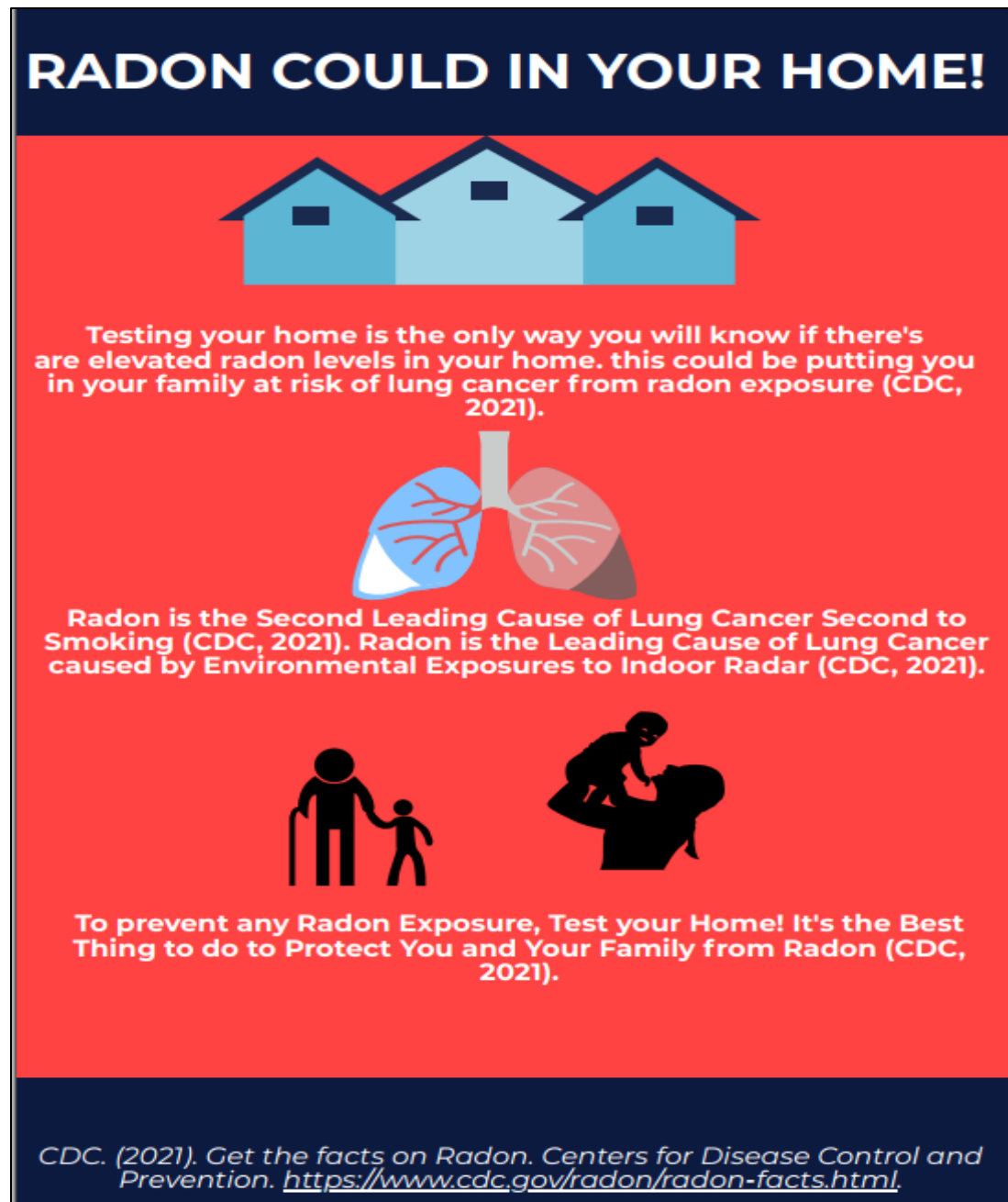
**Welcome Home –**

**Test Your Home for Radon First!**

**Created by Calla**




Poster:  
Radon Could Be in Your Home!  
Created by Erika





# Student Quotes





**“Working with the coalition members, I felt very empowered that I was helping bring awareness to this issue”**

**“The most valuable thing I learned this term was that I can present something well and that it is possible for me to grow in that area. This was really encouraging and eye opening and has given me a lot more courage for future presentations. Further, feeling like a team throughout the term and creating something awesome is always such a good feeling and I am so proud that we were able to do that this term.”**

**“To know that my work is appreciated and recognized has been uplifting and I am truly honored to have been able to work with such amazing people. I have left this project with more goals to help inspire more change within my community.”**



**“Completing this radon project this term helped me gain more insight on how public health works in real world practice. In the meetings with the coalition members, I always left very positive feelings about public health work environment. This helped me gain better insight on public health professionalism and the workings on public health in the real-world setting. All the coalition members came from a different background and organization, and they all had a very collaborative approach when addressing a health project.”**

**“The partnership with the Northwest Radon Coalition gave me the opportunity to see Public Health in action. Seeing the different agencies in action working together towards a common need opened my eyes to the grasp and impact public health can have. I also really enjoyed getting to interact and communicate with coalition members during zoom meetings and hearing their expert opinions.”**



**"I am now equipped with the knowledge about radon and will be able to protect myself and my neighbors from the dangers of radon. I am also able to proceed with confidence into a future career in Public Health equipped with the skills and tools needed to be successful."**

**"There are so many courses we take throughout our college careers that don't give near this amount of hands-on learning, and it can be easy to forget why we chose our major in the first place. This opportunity to take this course and work closely with professionals to help a specific population has been extremely rewarding and inspiring."**

**"I learned a lot about what I love to do and what I am capable of."**