

# Impact of environmental exposures in Oregon: Radon health risks

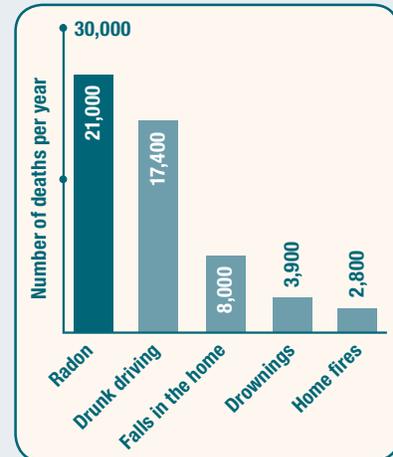


## What is radon?

Radon is a radioactive gas formed from the natural decay of uranium, which is found in varying concentrations in most rock and soil. Humans can be exposed to radon gas as it migrates through soil into the air and concentrates in enclosed spaces.

## Facts about radon:

- Radon is dangerous. **It is the second leading cause of lung cancer after smoking, and the primary cause of lung cancer in non-smokers.** When smokers are exposed to radon, their risks are magnified.
- Radon gas is estimated to be linked to 3 percent to 14 percent of all lung cancers worldwide.
- Radon is measured in picocuries per liter of air (pCi/L). The Environmental Protection Agency (EPA) recommends installing a mitigation system if levels in a home are 4 pCi/L or above. If 1,000 smokers were exposed to this level over a lifetime, about 62 of them could get lung cancer. If 1,000 nonsmokers were exposed to the same level, about 7 people would be expected to get lung cancer.
- The World Health Organization (WHO) recommends mitigation at 2.7 pCi/L.



## Who may be at risk in Oregon?

- EPA estimates that radon exposure leads to 21,800 additional lung cancer deaths in the United States each year. This accounts for 1 in 8 lung cancer deaths in people who currently smoke or who have smoked in the past, and 1 in 4 lung cancer deaths in people who have never smoked.
- Northwest Oregon, including the Columbia Gorge and Willamette River Valley, tends to be the area of greatest known concern for radon exposure in Oregon. The geology of much of eastern Oregon would suggest high risk, but, unfortunately, not enough radon testing has been done to know what the actual

risk is in much of the state. The areas that are known to have high radon levels are also some of the more populated areas in Oregon, and should be of concern to all who are working to protect the health of Oregonians.

- The radon program at the Oregon Health Authority's Public Health Division tracks radon test results reported by several of the radon test kit manufacturers around the nation. Of 14,525 tests results received in the last 20 years, almost **50 percent of the results were greater than 2.7 pCi/L, and 38 percent were more than 4 pCi/L**. This, however, represents less than 1 percent of Oregon households, and most tests are performed in areas of known concern. Overall, the **actual extent of the problem is unknown**.

### **Costs of radon in Oregon:**

- 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.
- Each of these cancer cases is estimated to cost between \$36,000 and \$48,000 for the first year's medical treatment. **Thus, the total cost in Oregon of lung cancer treatment within the first year of diagnosis attributable to radon exposure (14 percent) could be estimated between \$13 million to \$18 million.**
- This does not include loss of productivity, cost of ongoing treatment or death.
- **An estimated 1,823 productive years are lost to ill health, disability, or premature death because of radon-related lung cancers diagnosed each year in Oregon.** This not only leads to individual losses, changes in lifestyle and psychological distress, but also removes individuals from their ability to contribute to Oregon's economy.

### **What is Oregon doing?**

- The radon program in Oregon was established 20 years ago. Recently, it has become part of the newly formed Healthy Homes and Schools Program in the Oregon Public Health Division's Office of Environmental Public Health (OEPH).
- The staff of the radon program work to educate the public about the health risks from radon, as well as helping citizens to find testing and mitigation resources. The program has received more than 300 calls per year during the last 3 years.
- Radon education and exposure prevention are primarily done at the state level rather than the local or county level. County public health departments generally refer people with concerns about radon to OEPH. Some county health departments may be able to assist you. There is clear need for greater outreach to further educate public health professionals as well as the general public about the risks of radon exposure in Oregon.

## How can we decrease this costly public health risk?

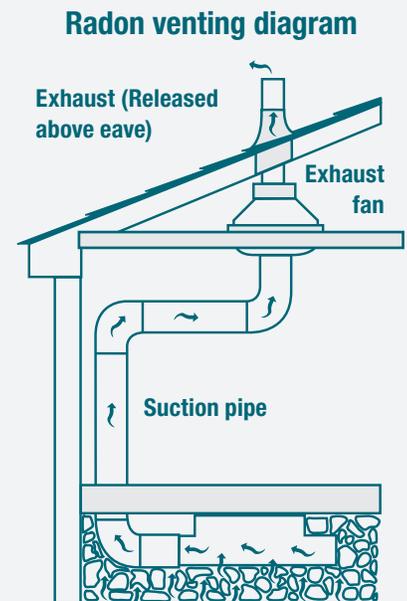
- Fortunately, it is relatively easy to either retrofit an existing home or to build new homes using “Radon Resistant New Construction” (RRNC) techniques. Retrofitting an existing home with a mitigation system costs between \$350 and \$2,500 per system. Mitigation systems can effectively reduce radon levels in the home, typically to levels below 2 pCi/L.
- Because of the **clear cost effectiveness** of RRNC over radon mitigation, the OEPH radon program helped pass Senate Bill 1025 during the 2010 Special Legislative Session mandating radon resistant construction in all new public and commercial buildings, and new single and multifamily homes in Oregon counties that have the greatest radon risk. This bill has the potential to save lives and a significant amount of health care dollars that are presently lost to radon-induced lung cancer.
- There are **environmental justice concerns** related to radon exposure. Mitigating a home with a radon problem can be an expense that many cannot afford. Currently all costs are borne by the homeowner.

## How much does the OEPH radon program cost?

- OEPH receives a small amount of money from federal grants to provide information and outreach materials and to employ one half-time employee. There are no state tax or fee dollars for this effort at this time.

## What priority actions could the radon program take if more funding were available?

- Strengthen health education outreach and risk communications regarding radon.
- Encourage greater statewide radon testing to clarify the extent of the problem and to more fully identify those Oregonians at greatest risk.
- Increase outreach to, and collaboration with, local public health departments to increase their ability to address local issues and concerns.
- Provide training and certification for professionals who provide in radon testing and/or mitigation.
- Provide followup for significantly elevated radon levels and measure the effectiveness of the mitigation work.
- Establish partnerships with other stakeholders to pay for radon mitigation.
- Increase the extent and quality of research on radon exposures and radon’s health effects in Oregon.



## Sources

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## For more information:

For questions about radon or the source document for this fact sheet, contact:

### Oregon Public Health Division Healthy Homes and Schools Program

800 NE Oregon, Suite 640  
Portland, OR 97232  
Phone: 971-673-0440

[www.healthoregon.org/radon](http://www.healthoregon.org/radon)

## Additional radon resources:

US Environmental Protection Agency:  
[www.epa.gov/radon/index.html](http://www.epa.gov/radon/index.html)

American Lung Association in Oregon:  
[www.lungoregon.org](http://www.lungoregon.org)

Agency for Toxic Substances and Disease  
Registry (ATSDR):  
[www.atsdr.cdc.gov/toxfaqstf.asp?id=406&tid=71](http://www.atsdr.cdc.gov/toxfaqstf.asp?id=406&tid=71)

World Health Organization:  
[www.who.int/ionizing\\_radiation/env/radon/en/](http://www.who.int/ionizing_radiation/env/radon/en/)



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