

# Health Policy Brief:

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### Radon

### What is radon?

The Environmental Protection Agency (EPA) defines radon as a colorless, odorless, naturally occurring radioactive gas that can cause lung cancer after long periods of exposure.

### Where does it come from?

Radon is naturally in the atmosphere in trace amounts and disperses rapidly when outdoors. It comes from the natural breakdown of uranium in soil, water and rock and is found almost everywhere in the United States. It can come from underground uranium mines, phosphogypsum stacks, energy facilities, the disposal of uranium mill tailings and (delete the word from) operating mill tailings, among other sources. Indoors, however, radon becomes trapped after it enters buildings from the soil through cracks in the foundation, which can lead to high levels of radioactivity. Another less common pathway of exposure is through water sources, particularly water sources from wells.

### Where is radon found?

Any building can contain radon, but those with older foundations and/or poor ventilation are more likely to experience levels of concern. About one in every 15 homes and one in every five school classrooms have high, unhealthy levels of radon, meaning levels are above the EPA action level of 4 picocuries per liter of air (4 pc/L).

Pennsylvania has (delete the word a) unique geology that puts residents at higher risk for radon exposure than in other states. 98.5% of PA counties are designated as Zone 1 or 2 risk factor by the EPA. 73% of the counties are in the Zone 1 risk area, meaning their average levels are above the EPA action level.



### How are people exposed to radon?

According to the American Lung Association, radon decay particles attach to dust and are inhaled into the lungs. These particles give off radiation and cause damage to the lung cells that can cause future cancer.<sup>1</sup> Ingestion through drinking water is a much less common and less dangerous pathway of exposure than inhalation. If there is radon exposure from water, it is usually released when water is used for household activities and is usually not highly present in drinking water. There is also a much higher risk of radon being present in groundwater sources than surface water sources. In a study of more than 900 water wells in Pennsylvania, 78% exceeded the radon level of 300 pCi/L, 52% exceeded 1,000 pCi/L and 10% exceeded 5,000 pCi/L.<sup>2</sup>

## What are the health effects from radon exposure<sup>3</sup>?

According to the EPA's Assessment of Risk for Radon in Homes, it is estimated that radon in indoor air causes about 21,000 lung cancer deaths each year in the United States. Radon is the second leading cause of lung cancer, behind smoking. While the long-term effects can be fatal, there are no immediate symptoms from radon exposure.

### Who is most at risk?

Smoking and radon exposure separately increase the risk of lung cancer, but individuals who smoke are at a much greater risk of lung cancer than those who do not.

#### Is radon especially unsafe for children?

There is limited evidence of childhood radon exposure being linked to an increased risk of childhood cancers such as leukemia.<sup>4</sup>

### Is radon a carcinogen?

Yes, radon is in the highest class of carcinogens, or cancer-causing agents, by the International Agency for Research on Cancer<sup>5</sup>. This means that the scientific evidence available shows that long-term radon exposure is carcinogenic to humans.

# Current Radon Regulations

### **Federal Radon Laws**

Currently, there are no federal, enforceable regulations that control indoor radon levels. There is, however, an EPA recommendation to remediate buildings when the indoor radon air concentrations equal or exceed 4 pCi/L.<sup>6</sup>

### State Radon Laws<sup>7</sup>

- The Pennsylvania Seller's Property Disclosure Statement requires sellers to disclose known radon levels in the sale of homes.<sup>8</sup>
- The Radon Mitigation law offers a certification program for persons who test for radon with a civil penalty for the misrepresentation of radon readings. However, the law:
  - Does not require radon testing
  - Does not require landlords to disclose radon to tenants
  - Does not require radon-resistant new construction
  - Does not have a law requiring state preparation of a public education/ awareness program or document related to radon
- The PA DEP encourages all homeowners, school officials and building owners to test for radon but does not legally require them to do so.

### **Local Radon Policy**

Radon is not regulated by Allegheny County public health codes or any municipal housing codes within the county.

### **Radon in Schools Workgroup**

Women for a Healthy Environment created a Radon in School Workgroup that works with school personnel, radon professionals and community members to increase knowledge about the health impacts of radon, as well as provide policy solutions to ensure that preventable radon exposure in the learning environment is eliminated and no one is exposed to radon in the school environment.



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# Policy Recommendations

### State

- Require all homes to undergo radon testing at the point of sale.
- Require property owners to disclose any known radon test results to tenants.
- Require all school buildings and early learning centers to test for radon within 19 months of any new construction or major renovation OR every 5 years, whichever comes first.
- Create an advisory board with medical and public health professionals, certified radon scientists, and other experts to provide guidance to schools and child care facilities on best practices and health-based standards.
- Require school districts and early learning centers to submit plans for remediation to the PA Department of Environmental Protection if radon levels are found above 4 pCi/L.

- Require schools and early learning centers to make their testing data and any applicable plans for remediation public within 90 days of receiving results.
- Establish testing for and mitigation of environmental hazards, including radon, as a baseline requirement for schools applying to the Pennsylvania School Safety and Security Grant Program.

### Local

- Allegheny County requirement for radon testing, disclosure of results, and remediation if needed prior to any real estate transactions.
- Allegheny County requirement for all newly constructed homes and dwellings, schools and early learning centers to adhere to the Radon Resistant Construction Standards.
- Municipal requirements for radon levels below the federal action level of 4 pCi/L as a condition for obtaining occupancy and building permits, and rental registration certificates if applicable.

### Endnotes

- 1. American Lung Association (2020) Radon <u>https://www.lung.org/clean-air/at-home/indoor-air-pollutants/radon</u>
- 2. PennState Extension (May 2015). Reducing Radon in Drinking Water https://extension.psu.edu/reducing-radon-in-drinking-water
- 3. United States Department of Environmental Protection (November 2020) Health Risk of Radon <u>https://www.epa.gov/radon/</u> <u>health-risk-radon</u>
- 4. https://iaq.zendesk.com/hc/en-us/articles/211432758-What-are-the-health-effects-from-exposure-to-radon-
- 5. IARC Working Group IARC Monographs.https://monographs.iarc.fr/wp-content/uploads/2018/06/mono100D-9.pdf.
- 6. World Health Organization International Agency for Research on Cancer (November 2020) Agents Classified by the IARC Monographs, Volumes 1-128 <u>https://monographs.iarc.fr/agents-classified-by-the-iarc/</u>
- 7. Agency for Toxic Substances and Disease Research (June 2010) Radon Toxicity What are the Standards and Regulations for Environmental Radon Levels? <u>https://www.atsdr.cdc.gov/csem/csem.asp?csem=8&po=8</u>
- e. United States Environmental Protection Agency (October 2019) Radiation Regulations and Laws
- 9. https://www.epa.gov/radiation/radiation-regulations-and-laws
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- 11. Pennsylvania Code Seller's Property Disclosure Statement
- 12. https://www.dos.pa.gov/ProfessionalLicensing/BoardsCommissions/RealEstateCommission/Documents/Board%20Documents/ Sellers%20Property%20Disclosure%20Statement.pdf

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