



Policies to Prevent Radon Exposure, The #1 Leading Cause of Death in Homes

Background: Radon Exposure Causes Lung Cancer

Radon-222 (hereafter called radon) is a colorless, odorless, tasteless, radioactive gas, produced naturally in rocks and soil by the decay of uranium-238 and subsequently radium-226. Radon gas is typically present at a higher concentration indoors than outdoors. A high radon gas concentration in a home or workplace increases the risk of radon-related lung cancer. Radon is the number one cause of lung cancer among individuals who have never smoked, and the second leading cause of lung cancer overall.

Radon is one of the most extensively studied environmental carcinogens, and the diversity and consistency of findings provide overwhelming evidence that protracted radon exposure is the leading environmental cause of US cancer mortality:

- ✓ The National Academy of Sciences' National Research Council estimated that 66% of radon-induced lung cancers occur below the U.S. EPA's radon action level (4 picocuries per liter (pCi/L) or 148 Bq/m³)
- ✓ EPA estimated in 1995 that protracted *residential* radon exposure to just 1.3 pCi/L (48 Bq/m³), the U.S. mean residential radon concentration, causes 21,000 radon-related lung cancer deaths each year. More deaths result from exposure in schools and workplaces, and the increased population and housing stock.
- ✓ On an annual basis, if considered its own disease category, radon-induced lung cancer would be the ninth leading cause of cancer mortality in the U. S.

Data from a nationwide radon study performed by state radon programs and EPA over 25 years ago suggested that 1 in 15 U.S. homes have radon levels at or above EPA's action level. State radon data indicate that the proportion of homes with higher radon level is much greater; for example, in Iowa, 70% of tested homes exceed the action level.

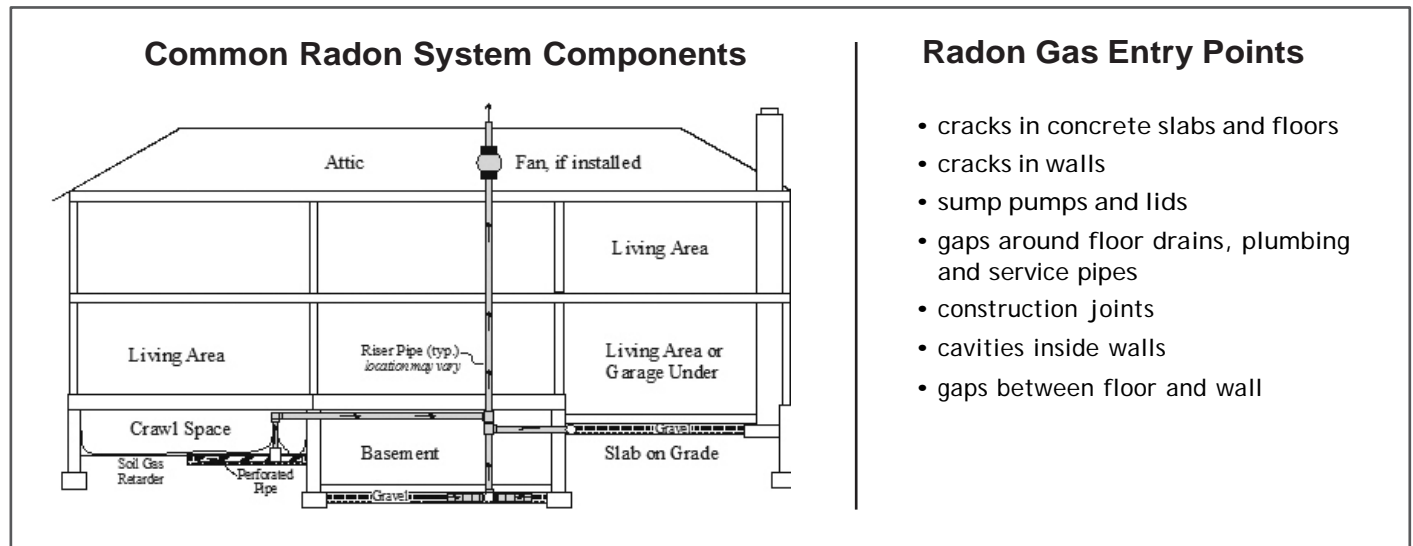
Testing is the only way to know if a home has elevated radon. Indoor radon levels are affected by soil composition under and around the home, and the pathways through which radon and other soil gas may enter the home. Homes that are next door to each other can have different indoor radon levels, making a neighbor's test result an imprecise predictor of radon risk. Elevated indoor radon levels can be mitigated by a properly certified professional, and the risk of radon entry can be reduced when a home builder adheres to standards for radon resistant new construction.

The U.S. EPA and the U.S. Surgeon General recommend taking action to reduce indoor radon levels in homes that have a radon level at or above 4 pCi/L. This action level is not health-based: there is no known safe level of radon. In 1988, the U.S. Congress set a long-term goal that indoor radon levels be no more than the outdoor level of 0.4 pCi/L (15 Bq/m³). While reducing radon in homes to this level is not yet technologically achievable, the radon concentrations in most homes today can be reduced to 2 pCi/L (74 Bq/m³). The World Health Organization (WHO) has set a recommended radon reference level of 100 Bq/m³ (2.7 pCi/L) for WHO member countries. U.S. implementation of the WHO recommendation would eventually prevent about 5,500 radon-related lung cancer deaths annually.

**Prevent radon-induced lung cancer deaths:
Test and mitigate existing homes,
Build radon out of new homes.**

Radon Resistant New Construction (New Homes)

It is possible to build a new home to prevent elevated levels of radon gas, which exists in the ground, from entering the home. In brief, the evidence-based physical interventions that prevent radon entry into the living space are (1) channeling radon from below the ground and foundation into a pipe that exhausts safely to the outdoors and (2) sealing the foundation and other building components so radon can't go around the pipe to enter the home. Eight states (IL MA MD MI MN NJ OR WA) require homebuilders to use radon-resistant construction.



Elements of an RRNC law:

- ✓ **Standard/Methodology.**
 - Appendix F of the *International Residential Code (IRC)*
 - ANSI-AARST CCAH *Reducing Radon in New Construction of 1 & 2 Family Dwellings & Townhouses*
- ✓ **Performance Assurance**
 - Fan. Electrical connection rough-in (passive system) or fan installation and activation (active system).
 - Radon Test. Test result below the action level, radon test kit, or information on getting a radon test.
- ✓ **Geographic Scope.** Homes in all areas, or only in counties that have been designated high and moderate risk zones. Since homes with high radon have been found in every zone, IL and MN protect homes in all areas.
- ✓ **Type of Housing Protected.** Three states (IL NJ WA) cover all types; four states (MA MD MI MN) limit protection to one and two family homes and townhouses; one state (OR) covers the same plus apartments.

Testing (Existing Homes)

Radon testing is the only way to determine whether an existing building's radon level is below the maximum standard of 4 pCi/L. Without test results, the household considering moving has no way to know if occupying this home will increase the family's risk of lung cancer. Several states (CO CT FL IA MN NJ OH RI VA WA WV) have testing policies for schools. No state has a testing law for homes sales; Montgomery County MD has enacted one.

Elements of a testing law:

- ✓ **Testing.** Prior to sale or rental of a residential property, the property owner shall have it tested for radon:
 - According to the consensus standard ANSI/AARST MAH *Protocol for Conducting Radon and Radon Decay Products Measurements in Homes*, and
 - By a state-licensed or certified radon measurement professional.

- ✓ **Disclosure.** The property owner shall provide results of radon testing to the prospective buyer or renter with the contract or lease. Test results shall be no older than a year preceding the date of the contract or lease.
- ✓ **Mitigation Option.** If the test reveals that radon is present indoors at a level equaling or exceeding 4.0 pCi/L, the property owner shall mitigate, repair, or alter the premises to reduce the radon level to below 2.0 pCi/L or permit the prospective buyer/renter to terminate the sales/rental agreement without loss of any deposit/fee.
- ✓ **Real Estate Agent.** The property owner may convey this information to a real estate agent representing the prospective buyer or renter so long as the real estate agent provides a copy to the prospective buyer or renter.
- ✓ **Rentals.** The owner of a currently occupied rental property shall have the property tested for radon gas and provide the results of radon testing to the renter. If the test reveals that radon is present indoors at a level equaling or exceeding 4.0 (pCi/L) picocuries per liter of air, the property owner shall either mitigate or permit the renter to terminate the rental agreement without loss of a security deposit or any other financial penalty.

Radon Awareness in Real Estate Transactions (Existing Homes)

In most states, required disclosure helps prospective buyers have a minimal knowledge base if the seller has property-specific radon information. Too often, because so few properties have been tested, the check box on the long disclosure form marked “No” is the one checked for radon - and that’s the extent of information provided to many homebuyers, despite the fact that the home purchase is the occasion when greatest attention is paid to property condition and risk. Radon awareness policies in two states have expanded risk reduction *without impeding home sales*, by increasing home radon testing to 55% of all homes sold in Illinois and increasing radon mitigations by 335% in Minnesota.

Elements of a radon awareness law:

- ✓ **Radon Awareness.** Prior to the sale or rental of a residential property, the property owner shall provide information with the contract or lease about the risks of radon to the prospective buyer or renter through a radon warning statement (sample below) and general information through a publication such as EPA’s Homebuyers’ and Sellers’ Guide. www.epa.gov/radon/pubs/hmbyguid.html
- ✓ **Full Disclosure.** The property owner shall disclose in writing all knowledge of radon gas such as:
 - whether radon testing has occurred and current records pertaining to radon concentrations
 - a description of any radon concentrations, mitigation, or remediation
 - information regarding the radon mitigation system, including system description and documentation, if such system has been installed in the dwelling
- ✓ **Transaction Types.** The disclosure requirements shall apply to the transfer of any interest in residential real estate, whether by sale, exchange, deed, contract for deed, lease, lease with an option to purchase, or other option.
- ✓ **Real Estate Agent.** The property owner may convey this information to a real estate agent representing the prospective buyer or renter so long as the real estate agent provides a copy to the prospective buyer or renter.

RADON WARNING STATEMENT

The (*title of department or commissioner*) of (*state*) strongly recommends that ALL homebuyers have an indoor radon test performed prior to purchase or taking occupancy, and recommends having the radon levels mitigated if elevated radon concentrations are found. Elevated radon concentrations can easily be reduced by a qualified, certified, or licensed, if applicable, radon mitigator.

Every buyer of any interest in residential real property is notified that the property may present exposure to dangerous levels of indoor radon gas that may place the occupants at risk of developing radon-induced lung cancer. Radon, a Class A human carcinogen, is the leading cause of lung cancer in nonsmokers and the second leading cause overall. The seller of any interest in residential real property is required to provide the buyer with any information on radon test results of the dwelling.

Professional Licensing

In order to provide accurate and consistent results from testing and deliver effective mitigation that reduces radon levels, evidence-based standards and a cadre of trained certified professionals have emerged over the past decades. Radon exposure is a complex building problem that demands personnel who are appropriately trained and following

recognized standards: horror stories (with photos) of costly ineffective systems abound. There is no federal program regulating radon services, but state laws in conjunction with private national certification programs protect the public. One third of states (CA CT FL IL IN IA KS KY ME MN NE NH NJ OH PA RI VA WV) require proficiency qualifications for personnel doing radon work. While a few operate in-state certification programs, others require that radon work be performed by persons who have earned recognition from a national recognized certification program that has ongoing qualification requirements such as education and recertification.

Elements of a radon professional licensing law:

- ✓ **State Radon Program Authorization.** The program shall administer licenses, collect fees, receive federal and state funds, and have necessary staff and equipment.
- ✓ **Licensing.** The state radon program shall establish and implement criteria, based on standards and ethical requirements promulgated by the US EPA, the American National Standards Institute (ANSI), and an ANSI national standards accredited developer, for mandatory licensure and certification of persons involved in the following services pertaining to radon:
 - Screening sampling/ testing of air or water,
 - Diagnostic sampling/ testing of air or water,
 - Mitigation and mitigation planning services, and
 - Training courses to meet the licensing and certification requirements.
- ✓ **Certification and Standards Requirement.** To provide radon services, a person shall be licensed by the state radon program or certified by the National Radon Proficiency Program, or an EPA-recognized accrediting organization, and shall adhere to recognized consensus standards.
- ✓ **Testing.** The program shall promote a radon/radon progeny testing program.
- ✓ **Public Information.** The program shall provide information over the phone, in-person and in writing regarding radon/radon progeny health effects, the necessity for testing buildings, recommended practices for reducing elevated levels of radon, availability of certified personnel, and related issues.

Every State Can Save Lives through Proactive Policies

The primary policy levers for preventing radon exposure are radon-resistant new construction, radon testing, radon awareness, and professional licensing. Each of these policies will contribute to the cause; together they present a winning combination to protect occupants of all homes.

GETTING STARTED OR SEEKING HELP WITH A HOT RADON POLICY QUESTION?

AARST is available to review legislative language and provide technical advice
Please contact Jane Malone, National Policy Director, jmalone@aarst.org

The American Association of Radon Scientists and Technologists is a nonprofit, professional organization of members who are dedicated to the highest standard of excellence and ethical performance of radon measurement, radon mitigation and transfer of radon information for the benefit of members, consumers and the public at large.
www.aarst-nrpp.com