ANSI/AARST MAH 2023



An American National Standard

Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes

AARST CONSORTIUM ON NATIONAL STANDARDS
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Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes

Scope Summary and Introduction

This standard of practice specifies procedures and minimum requirements for measuring radon concentrations in single-family residences to determine if radon mitigation is necessary to protect current and future occupants. This standard applies to homeowners, professionals and any other party seeking to determine if radon mitigation is necessary for real estate or non-real estate purposes.

Sections 1-7 are directed at anyone conducting radon tests. Additional requirements in Sections 8-9 are directed at those conducting radon tests in association with professional services. While recommended for immediate use, the effective date for compliance with this standard is December 1st, 2023.

Updates for 2023

This standard of practice first published in 2005 and this most recent publication as an American National Standard in builds upon protocols developed by EPA relative to EPA's "A Citizen's Guide to Radon" and "Home Buyer's and Seller's Guide to Radon" publications. For 2023, improvements continue with improved clarity for:

- Planning tests that include testing multiple locations in a home (5.1.1),
- Test durations when closed-building conditions did not begin 12 hours before the test (4.1 a),
- How to handle test results that disagree (7.2.2), and
- Professional requirements for qualification (8.1), onsite documentation (8.5.5) and reporting.

Purpose

Radon is the leading cause of lung cancer among nonsmokers and the second leading cause of lung cancer in the general population.[1] Most people receive their greatest exposure to radon in their homes. Radon in U.S. homes causes approximately 21,000 lung cancer deaths each year.[2] Be it at home, work or school, an individual's exposure to radon gas combines over time to increase the risk of preventable lung cancer.

Historical Perspective

In the 1950s, studies confirmed increased incidence of radon-induced lung cancer for workers in underground mines. In the 1980s, studies found that exposure to radon in homes can exceed exposures found for mine workers. This discovery resulted in the Indoor Radon Abatement Act (1988) that authorized U.S. state and federal activities to reduce citizen risk of lung cancer caused by indoor radon concentrations. Since 1988, the United States Environmental Protection Agency (USEPA) and the U.S. Surgeon General have recommended that all homes be tested for radon.

In 1999, with publication of the BEIR VI[2] study, the National Academy of Science confirmed that any exposure to radiation, including any concentration of radon, carries risk. In 2009, the World Health Organization's "WHO Handbook on Indoor Radon" confirmed the association between indoor radon exposure and lung cancer, even at the relatively low radon concentrations found in residential buildings.[1]

Normative References

ANSI/AARST MS-QA (Radon Measurement Systems Quality Assurance)

ANSI/AARST MS-PC (Performance Specifications for Instrumentation Systems Designed to Measure Radon Gas in Air)

ANSI/AARST MA-MFLB (Protocol for Conducting Measurements of Radon and Radon Decay Products in Multifamily, School, Commercial and Mixed-Use Buildings) *Previously MAMF & MALB*

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[1] World Health Organization, "WHO Handbook on Indoor Radon: A Public Health Perspective" 2009

[2] National Academy of Sciences, "Biological Effects of Ionizing Radiation" (BEIR VI Report) 1999

Other ANSI/AARST standards developed to respond to the threat of cancer caused by radon:

ANSI/AARST SGM-SF	(Soil Gas Mitigation in Existing Homes)
ANSI/AARST SGM-MFLB	(Soil Gas Mitigation in Existing Multifamily, School, Commercial and Mixed-Use Buildings) *Previously RMS-MF & RMS-LB*
ANSI/AARST CCAH	(Reducing Radon in New Construction of One & Two Family Dwellings and Townhouses)
ANSI/AARST CC-1000	(Soil Gas Control Systems in New Construction of Multifamily, School, Commercial and Mixed-Use Buildings)
ANSI/AARST RRNC	(Rough-in of Radon Control Components in New Construction of 1 & 2 Family Dwellings and Townhouses)

Designation of this standard:

MAH As used for catalogue identification, "MAH" stands for Measurement of Air in Homes.

The Consensus Process

The consensus process developed for the AARST Consortium on National Standards and as accredited to meet essential requirements for American National Standards by the American National Standards Institute (ANSI) has been applied throughout the process of approving this document.

Continuous Maintenance

This standard is under continuous maintenance by the AARST Consortium on National Standards. The Executive Stakeholder Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard.

User Tools: User tools are posted online (www.standards.aarst.org/public-review), such as exhibit templates for field notices, inspection forms and, across time, interpretations, and approved addenda updates.

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MAH
Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes

1.0 SCOPE AND PURPOSE

1.1 Scope

This standard of practice specifies procedures and minimum requirements when measuring radon concentrations in single-family residences for determining if radon mitigation is necessary to protect current and future occupants. This standard applies to homeowners, professionals and any other party seeking to determine if radon mitigation is necessary for real estate or non-real estate purposes.

1.2 Limitations

1.2.1 This standard does not address all technical aspects of measurement devices, quality assurance or techniques to specifically identify radon sources such as radon in water supplies, building materials or relative to the possession and handling of radioactive materials.

1.2.2 Adherence to this standard does not guarantee or supersede compliance with regulations of any federal, state, or local agency with jurisdiction where testing is performed.

1.3 Applicability

1.3.1 These standards of practice can be adopted as requirements for contractual relationships or adopted as recommendations or requirements of an authority or jurisdiction such as private proficiency programs, a state radon program or other governmental body.

1.3.2 The terms "Note" and "Informative Advisory" indicate provisions that are considered to be helpful or good practice but that do not contain a mandatory requirement.

Informative Table of Contents for Topics Commonly of interest

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2.2 When to test
2.3 Test devices
2.4 Who should conduct the test
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8.0 Requirements for professionals
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2.0 INTRODUCTION—BEFORE YOU TEST

2.1 Which Homes Should Be Tested?

Informative Advisory—Any home on any parcel of land can have a radon problem. Testing is the only way to know.

Every home should be tested to include new and old homes; tightly sealed and drafty homes; and homes with or without basements or crawl spaces. Radon concentrations cannot be predicted based on state, local or neighborhood radon measurements.