



# OM & M EMERGING STANDARD

Arriving in 2025

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# **01 Introduction**

 **Operation, Maintenance & Monitoring**

 **Long-Term Stewardship**

 **SG-OMMM 202? ANSI/AARST Standard**

 **OM&M is a plan or document**

 **Long-term Stewardship is an action of managing**



# 01 Long-Term Stewardship



**Ongoing Maintenance**



**Monitoring and Evaluation**



**Compliance and Documentation**



**Risk Management**



**Sustainability and Efficiency**



**Engagement and Communication**





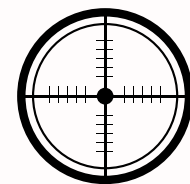
## 02 Background



**HISTORY:** The concept for OM&M (Operation, Maintenance, and Monitoring) was formally published in EPA's 1994 Radon Mitigation Standards (EPA-RMS).



**TIMELINE & IMPLEMENTATION:** Serve as voluntary guidelines; Available in 2025!



**SCOPE & APPLICATION:** Guidance for property owners and those responsible for managing properties.



**IMPACT & FUTURE PROSPECTS:** Potential to become a requirement over time. The adoption of these standards will lead to increased work opportunities.



## 03 Section 3: Measurement



### Measuring

**Measuring Radon:** Refer to ANSI/AARST MAH for Residential and MFLB for Multi-Family.

**Measuring COC's:** Refer to EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air or Toxic Organic Compounds in Ambient Air or AHJ.



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### Characterizing

COC's Health Risk: A full suite of soil or groundwater measurements must be performed, close to the building foundation. Measurement must be available for review. Indoor measurement may be required by the AHJ.



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### Record

- Seasonal Conditions
- Building Conditions
- Soil Permeability



## 04 Section 4: Mitigation and Follow-Up



### Mitigation is never prohibited

#### If concentration of radon or coc is below action level



- Test again within 1 year
- Not less than every 5 years
- Where testing is necessary due to cause; table 4.5



#### If concentration of radon is above

- Mitigate until below

#### If concentration of coc is above then



- Measurements of soil gas around foundation with consideration for attenuation
- Confirmed coc's in indoor air is coming from soil
- Evidence vapor intrusion hazards exceed action level
- That is acceptable to, established by and required by the AHJ.



## Table 4.5

# Stewardship Monitoring Due to Cause

**Procedures to verify continued low hazard conditions shall be conducted in conjunction with any sale of a building and after any of the following events occur:**

- ✓ **New adjoining additions, structures, or parking lots;**
- ✓ **Building reconfiguration or rehabilitation;**
- ✓ **A ground contact area not previously tested is occupied or a building is newly occupied;**
- ✓ **Heating or cooling systems are altered with changes to air distribution or pressure relationships;**
- ✓ **Ventilation is altered by extensive weatherization efforts;**
- ✓ **Sizable openings to soil occur due to:**
  - **groundwater or slab surface water control systems or sewer lines are added or altered (e.g., sumps, drain tiles, shower/tub retrofits, etc.) or**
  - **natural settlement causing major cracks to develop;**
- ✓ **Earthquakes, blasting, fracking, or formation of sink holes nearby; or**
- ✓ **An installed mitigation system is altered.**



## 04 4.4.3 OM&M Manuals



If systems are not maintained by owner/occupant...

then



A plan for OM&M shall be acquired by mitigation contractor/qualified professional.

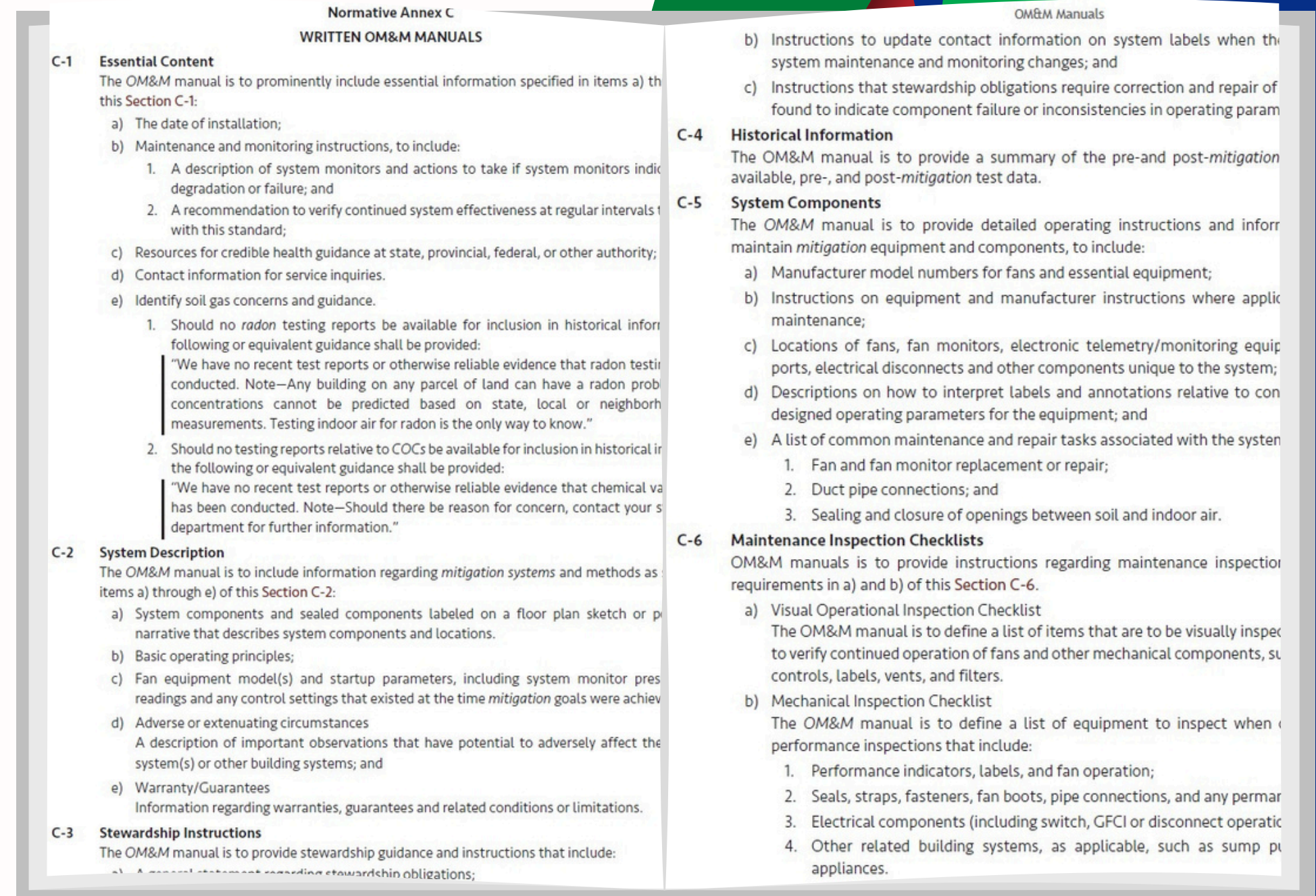
and



Included in OM&M manual that is retained and updated with logs, records, repair and measurements.



The OM&M plan shall be embodied in an OM&M manual that complies with requirements in Normative Annex C.



# Section 5: Building Characterization



**Ensure mitigation effectiveness across seasons:**

1. Testing radon hazards for one year if concentrations were less than 8 pCi/L. and/or
2. Seasonal or year-round air pressure testing of indoor air compared to air in soil or adjacent spaces.



**Classify potential hazard as chronic, subchronic, or acute determined by AHJ.**

**Class 1 Risk –Chronic or continuous risk**

1. One performance test for indoor concentration or PFE during “normal occupied building operating condition.” and
2. Another one under an alternate seasonal condition.

**Class 2 and 3 Risk – Subchronic or acute risk**

1. Test to evaluate effects of changing water table.





# 06 Section 6: Ongoing Monitoring

## ASD Systems



### HOMES

**Radon:** Annual inspections, bi-annual radon testing, testing when building changes

**Vapor Intrusion:** Annual inspections, yearly PFE testing, testing and indoor measurements as required. changes



### LARGER BUILDINGS

**Radon:** Annual functionality test, bi-annual radon testing, 5 year clearance test

**Vapor Intrusion:** Annual inspections, yearly PFE testing, testing and indoor measurements as required. changes



# 06 Section 6: Ongoing Monitoring

## NON-ASD Systems



### HOMES

**Radon:** Annual inspections, bi-annual radon testing, testing when building changes  
**Vapor Intrusion:** Annual inspections and indoor measurements as required. changes



### LARGER BUILDINGS

**Radon:** Same as homes, with additional biennial water testing if applicable.  
**Vapor Intrusion:** Same as homes, with continuous monitoring for acute hazards.

## Ongoing Stewardship

**Performance testing is required during the longest building operating condition and after significant changes.**





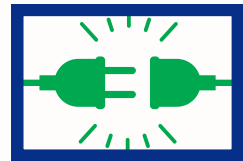
# 07 Section 7: Decommissioning



Step 1: Source Remediation



Step 2: Vapor Evaluation:



Step 3: Checks for Rebound:



Step 4: Decommissioning:

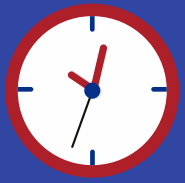


Property Owner Guidance:



# 08 Normative Annex A: Indoor Air Testing for COC

## A-1 BEFORE TESTING



**TIMING**



**ADVERSE VOC INFLUENCES**



**Stored Chemicals**

NEXT



**After Mitigation/Alteration**





# 08 Normative Annex A: Indoor Air Testing for COC

## A-2 GROUND-CONTACT COC TEST LOCATIONS



TARGET AREAS



SPECIFIC TARGETS



PLACEMENT OF SAMPLING  
DEVICES



# 08 Normative Annex A: Indoor Air Testing for COC

## A-3 CHOOSING A LOCATION WITHIN A ROOM



### TESTING LOCATIONS

#### Requirements for Test Locations Within a Room

3 feet (90 cm) from exterior doors and windows or other potential openings to the outdoors.

20 inches (50 cm) above the floor.

1 foot (30 cm) from the exterior wall of the building.

1 foot (30 cm) below the ceiling.

4 inches (10 cm) from other air sample collection devices and objects or surfaces that are above or to the side of the detector.

Exception: Less than 4 inches (10 cm) is permitted for detectors that are not affected nearby proximity to other objects. Confirm manufacturer or laboratory requirements recommendations prior to exercising this exception.

Air sample collection devices are to be not more than 8 inches (20 cm) from each other when seeking to use the average test result of two samples for QC checks and mitigation decisions.

*Formative Advisory*—Select a position within the room where the devices are unlikely to be disturbed, moved, or have their performance altered during the measurement period.

Do not place detectors inside closets, cabinets, drawers, sumps, crawl spaces or nooks in the building foundation.

Do not place detectors near heat sources, such as on appliances, radiators, fireplaces or in direct sunlight.

Do not place detectors near drafts caused by fans or heating and air conditioning vents or within enclosed areas of high air velocity such as mechanical/furnace closets.

Do not place detectors within enclosed areas that accumulate high humidity, such as bathrooms, laundry rooms and kitchens that are isolated by partitions and doors from adjoining less humid areas.

Exception: Where regularly occupied by workers for essential tasks, such as for cafeteria food preparation. Testing in such locations requires detector types that are virtually unaffected by high humidity which is to be confirmed by the manufacturer or laboratory prior to exercising this exception.

**No less than**

**No less than**

**No more than**



# 08 Normative Annex A: Indoor Air Testing for COC

## A-4 TEST CONDITIONS– CLOSED BUILDING PROTOCOL

**Table A-4: A Essential Closed Building  
Protocol Requirements**

**Table A-4: B Additional Requirements For  
New Construction, Renovations and  
Repairs**

**Table A-4: C Additional Clarification On  
Closed Building Protocol Requirements  
For Specific Components**





# 08 Normative Annex A: Indoor Air Testing for COC

## A-4.2 HVAC VENTILATION



Outside Air for Combustion Appliances



Ventilation with Outside Air



Temperature Control via Air Volume





# 08 Normative Annex A: Indoor Air Testing for COC

## A-5 MINIMUM REQUIREMENTS FOR EFFORTS TO VERIFY TEST CONDITIONS

**A-5.1 To fulfill minimum requirements for verifying test conditions, all following steps are required.**

**A-5.2 Surveillance not required**

**A-5.3 Quality Control of Test Conditions**



# 08 Normative Annex B: Air Pressure Testing

## B-1 PFE / Performance Test Conditions

## B-2 Non-ASD

## B-3 Jobsite Logs

### Normative Annex B AIR PRESSURE TESTING

#### B-1 PFE / Performance Test Conditions

Pressure measurements of indoor air relative to air within soils or, as applicable, air within adjoining indoor or outdoor air spaces are permitted for *performance testing ASD mitigation systems* and other *mitigation* methods that manipulate air pressure relationships to reduce the volume of soil gas entering a building.

#### B-1.1 Locations

A minimum of one differential pressure measurement shall be made at a location distant from the ASD suction point(s) with intent to evaluate if depressurization has been achieved or is being maintained within each targeted soil gas collection plenum.

#### B-2 Non-ASD

Performance testing *non-ASD mitigation* methods shall include air differential pressure measurements where required by national standards, OM&M plans or *AHJ*, for *mitigation* methods that rely on mechanical systems to manipulate air pressure to achieve *mitigation* goals.

#### B-3 Jobsite Logs

*Jobsite logs* for each pressure measurement event shall be retained in OM&M manual records that include:

- a) The status of heating, cooling, or mixed HVAC operating conditions, at the time when conducting *PFE* or other air pressure *performance testing*;

Note—Differing HVAC operating conditions can alter and create false assumptions regarding *PFE* and other air pressure *performance testing* results.

- b) Whether this testing was conducted, as is recommended;



# 08 Normative Annex C: Written OM&M Manuals

## C-1 Essential Content

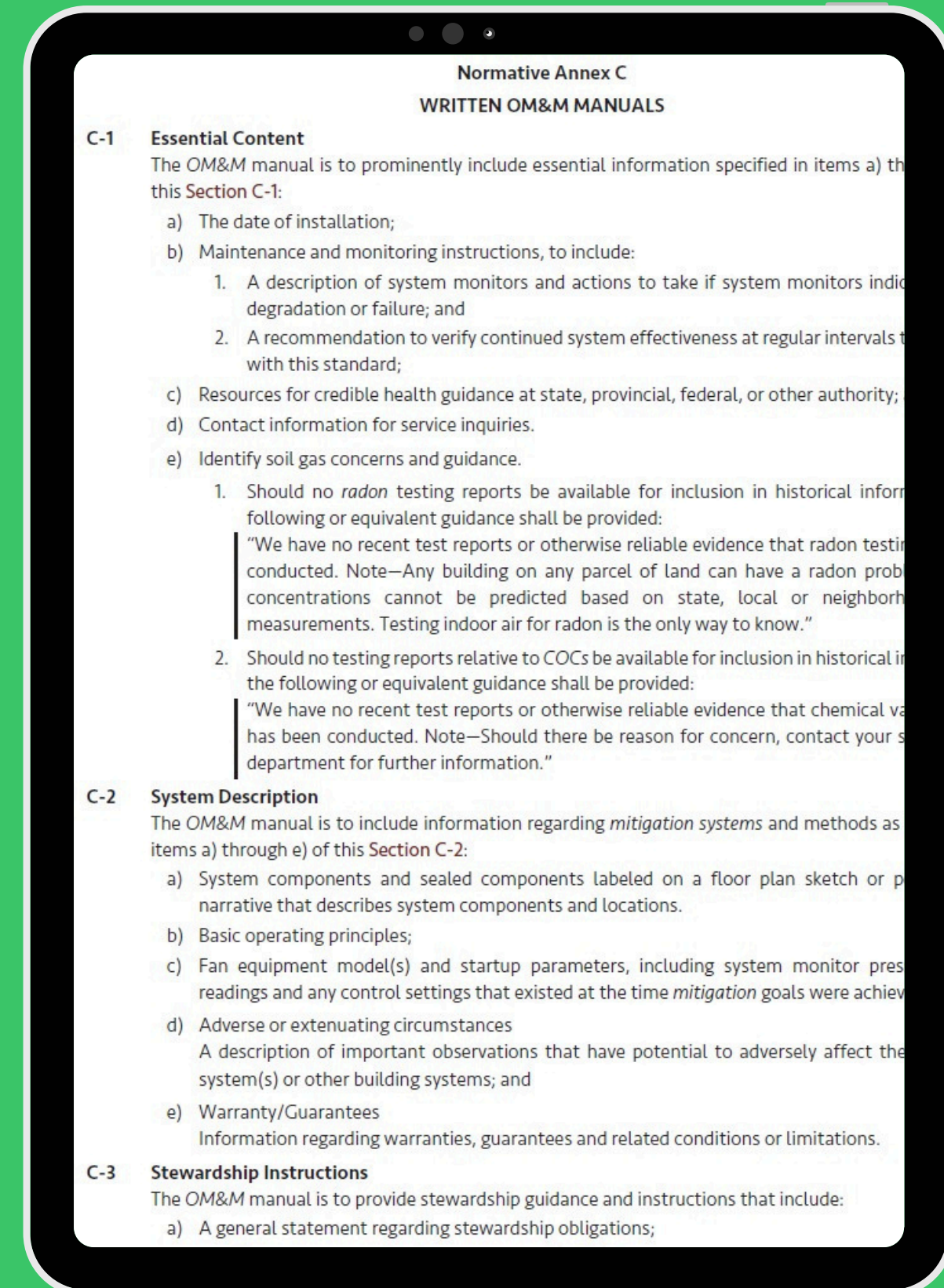
## C-2 System Description

## C-3 Stewardship Instructions

## C-4 Historical Information

## C-5 System Components

## C-6 Maintenance Inspection Checklists



# 08 Informative Annex D: Seasonal Testing Guidance

## If Class 1 Risk

Conduct under typical conditions  
and

Conduct during longest seasonal  
condition.

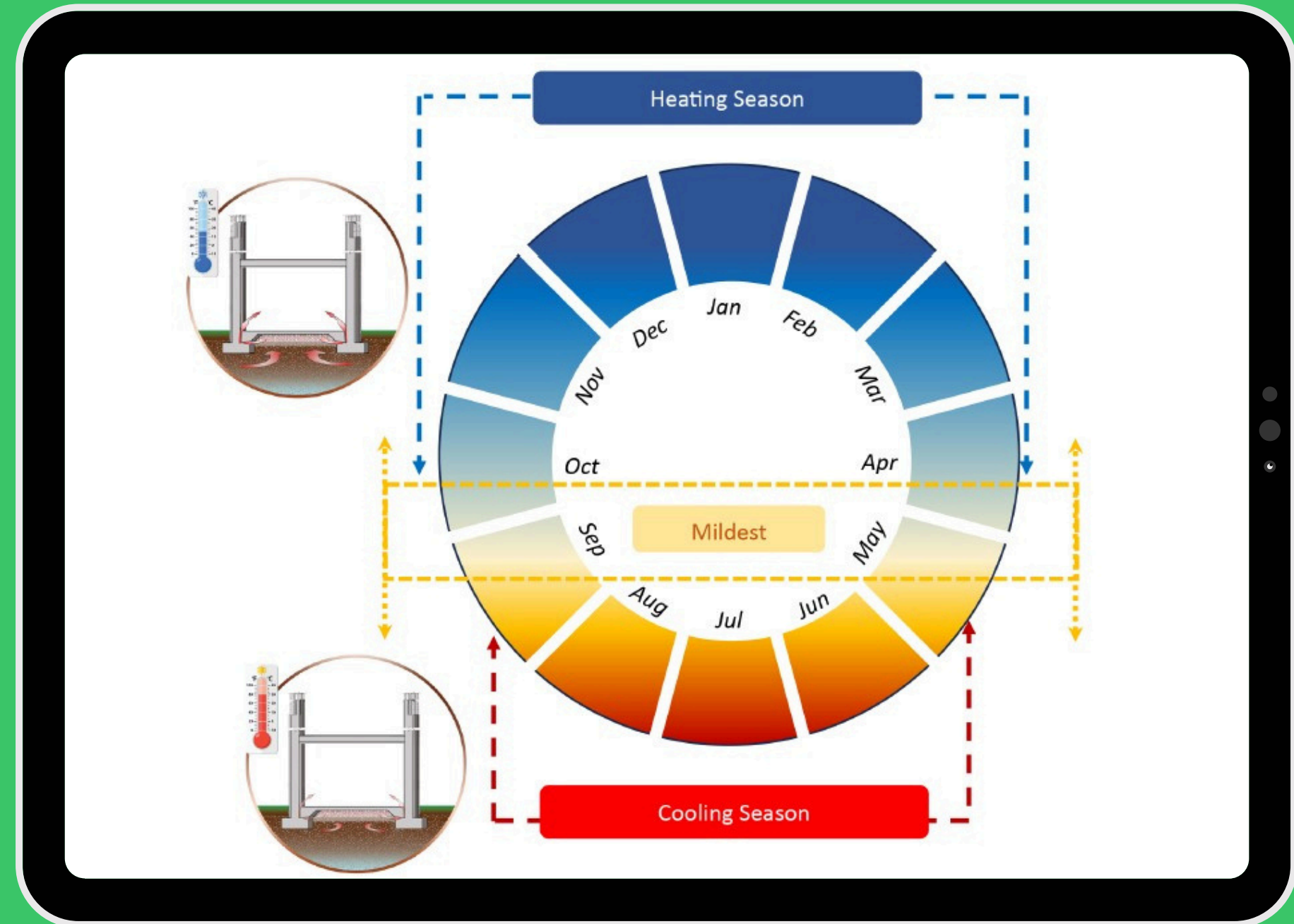
## If Class 2 or 3 Risk

Test during an intermediate condition  
that's different from the two main building  
conditions.

- Heating season when water tables are low,
- Heating season with snow or ice covering the soil,

and

- When high water tables.





# 08 Informative Annex E: HVAC Group Descriptions

## Group 1: Basic Heating and Cooling



## Group 2: Multi-zone Systems



## Group 3: Variable Outdoor Air Ventilation



## Group 4: Variable Air Distribution






## 09 Key Takeaways

 **ANSI/AARST Long-Term Stewardship of Radon and Soil Gas Hazards will be published in 2025.**

 **This standard will be a stand-alone document that will initially serve as voluntary guidelines for property owners and managers.**

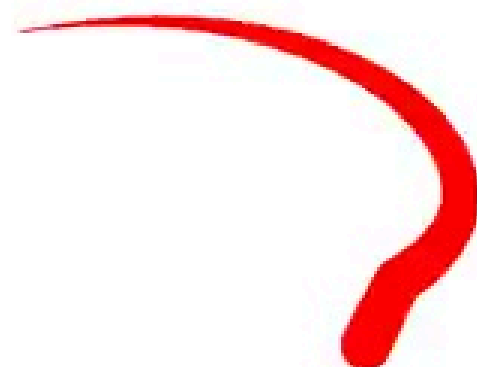
 **It provides details on how to measure radon and characterize coc's for homes and larger buildings. In addition, it outlines how to record seasonal, building and environmental conditions.**

 **This standard of practice addresses monitoring to confirm low hazard conditions across time, to include Operation, maintenance, and monitoring (OM&M) for mitigation systems based on ASD and Non-ASD mitigation methods and systems.**





***DAWN OGGIER***



**INDOOR  
ENVIRONMENTS**  
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