RADON: FROM MEASUREMENT TO GOVERNED PROTECTION

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Purpose. A proposed evidence-and-authority architecture addressing radon measurement reliability, professional qualification, mitigation accountability, independent verification and long-term stewardship. This is an educational model, not a certified radon program, an adopted standard, or evidence of field-validated deployment.

01 The challenge: trustworthy decisions, not just readings

A radon result is meaningful only in context: test purpose, placement, duration, building conditions, method, device quality assurance, professional competence, interpretation and follow-up. In a jurisdiction without mandatory radon licensing, no governance system can presume credentials or regulatory enforcement. Missing evidence must remain visible rather than being converted into a reassuring conclusion.

Governance question: What was measured, by whom, using which protocol and quality controls; what was proposed; who was entitled to authorize it; and what later evidence demonstrates the outcome?

02 Authority and non-claims

TA-14 does not issue radon credentials, replace ANSI/AARST standards, override EPA or state guidance, order work on private property, or require continuous monitoring in every building. Admissible Execution Architecture (AEA) evaluates a proposed consequential action against Admissible Evidence, Applicable Authority and Established Standing at the decision boundary. Its conceptual outcomes are ALLOW / HOLD / DENY / ESCALATE. ALLOW is not installation, legal permission, professional certification, or proof of safety.

A HOLD on discretionary work must not interfere with independently authorized health-protective measures. Emergency and ordinary response pathways must be distinguished under applicable procedures.

03 Roles and accountable handoffs

Actor	Responsibility and limitation
Measurement professional	Select applicable method and placement; document conditions, QA, identity and deviations; interpret within competence.
Mitigation professional	Design, obtain required approvals, install and document authorized mitigation under applicable requirements.
Owner / authorized decision-maker	Authorize work within lawful rights; receive clear findings; understand maintenance and retesting obligations.
Verifier / reviewer	Perform or review appropriate post-mitigation testing; disclose any relationship to installer and independence limitations.
TA-14 proposed evaluation layer	Assess documented evidence, existing authority and standing; retain traceable outcomes and unresolved exceptions; does not perform the work.

04 Worked hypothetical: a home with a result requiring follow-up

Scenario status: Illustrative only. No fabricated reading, field result, certificate, or claim of compliance is supplied. Before applying this to a real home, identify jurisdiction, decision purpose, applicable standard and edition, measurement method, and relevant action guidance.

1. Define the purpose Distinguish initial screening, real-estate transaction, diagnostic investigation, post-mitigation verification, or longer-term stewardship. Different purposes can call for different protocols.

2. Establish evidence admissibility Capture device identification and suitability; calibration and QA records as applicable; test start/end; location; building and closed-house conditions where required; chain of custody or digital integrity; practitioner identity; protocol and deviations.

3. Interpret responsibly Apply the appropriate standards and public-health guidance. Radon concentration varies over time; a reading alone does not identify an exact entry pathway or prove a particular mitigation design will work.

4. Verify authority and standing Identify the property decision-maker, consent, applicable qualifications, permits, contractual duties and other parties affected. Distinguish legal requirements from voluntary program conditions.

5. Evaluate proposed mitigation Document the recommended method, rationale, intended outcome, alternatives, constraints and unresolved uncertainties. AEA may HOLD or ESCALATE a proposal lacking required evidence, authority or standing.

6. Perform authorized work The responsible qualified professional installs and documents the mitigation system. TA-14 does not execute the work or substitute for installer obligations.

7. Verify, then decide again Conduct appropriate post-mitigation testing at the required timing and conditions. Record tester, method, results and limitations. If objectives are not supported, reopen investigation and corrective planning; installation completion is not success.

8. Maintain stewardship Identify maintenance owner, system checks, periodic retesting and triggers after renovations, changes in use or equipment faults; preserve revisions and communications for future authorized stakeholders.

05 Measurement evidence: a minimum proposed record

Evidence group	Examples of retained attributes
Protocol and setting	Purpose; applicable standard/edition; placement and room; test duration; building and environmental conditions; deviations.
Instrument and QA	Device make/model/identifier; method suitability; calibration and quality-control documentation where applicable; data or sample custody.
Attribution	Practitioner identity; credential claims and verification status; date/time; original result; uncertainty or limitations.
Decision trace	Interpreted result; applicable guidance; proposed action; authority and consent; ALLOW/HOLD/DENY/ESCALATE rationale.
Outcome and follow-up	Mitigation installation record; post-work test; reviewer independence; retest schedule; unresolved exceptions and revisions.

06 Certification, licensing and competence are different

A state may impose licensing, certification, registration or other requirements, or may impose none for a particular role. Third-party certification, documented training, experience and observed competence are different evidence types. The proposed record must label each accurately, check status and scope where verifiable, and never portray a voluntary qualification as a legal mandate. Program participation may require additional safeguards, but these must be described as program conditions, not state law.

07 Must every building be monitored continuously?

No. Short-term tests, long-term tests, periodic retesting and continuous radon monitors serve different purposes. Monitoring frequency should follow the applicable standard, decision context, building risk and practical circumstances. More data does not automatically mean a valid test; continuous sensors do not replace prescribed protocols or independently establish authority to act.

08 Verification is a separate evidence event

A mitigation invoice, installed fan, or contractor declaration does not establish a measured exposure reduction. Post-mitigation verification requires an appropriate method and timing, documented test conditions, and an intelligible result. Where an independent tester is required or chosen, record that independence; where not available, disclose the limitation rather than labeling a result independently verified.

A satisfactory follow-up measurement supports a conclusion only for the conditions and period evaluated. It is not a lifetime guarantee. Retesting and system maintenance remain part of stewardship.

09 Privacy, disclosure and understandable communication

Each deployment must identify who controls the data, the lawful or contractual basis for access, authorized recipients, retention and revision rules, disclosure obligations, and mechanisms to correct or challenge records. Home-specific measurements are not automatically public. A homeowner-facing explanation should distinguish what was measured, what it means, what remains uncertain, what action was taken, whether it worked, and what happens next.

10 A sample homeowner explanation (illustrative language)

“Testing identified a radon concern under the guidance applicable to this property and testing purpose. The measurement record identifies the method, location, test conditions and known limitations. A qualified professional recommended mitigation, which the authorized property decision-maker approved. Following installation, a separate test is needed to determine whether the intended reduction was demonstrated. Regardless of the result, future maintenance and retesting remain important. Ask for the original test record, installation documentation, follow-up result and any unresolved exceptions.”

11 Eight-image educational showroom sequence

Image	Distinct lesson
01	The invisible risk: radon in an ordinary home, without sensationalism
02	Measurement integrity: placement, protocol, conditions, QA and provenance
03	Qualification gap: licensing, certification and verified competence differ
04	AEA decision boundary: evidence + authority + standing
05	Mitigation: proposed correction versus authorized installation
06	Post-mitigation verification: measured outcome versus completion claim
07	Long-term stewardship: maintenance, retesting and record continuity
08	Public trust: clear reporting, privacy and independent professional critique

12 Questions for independent technical review

Which measurement standards and editions govern each decision type? Which deviations require HOLD versus ESCALATE? How should competence be verified without mandatory licensing? When is an independent post-mitigation tester required or preferable? What are the proper retest triggers and intervals? Which stakeholders have lawful access? What evidence would be required before claiming this architecture works operationally?

13 Evidence status and references

This is a proposed educational walkthrough, not an operational certification or field validation. It invites critique by radon professionals, ANSI/AARST practitioners, state radon programs, public-health experts, mitigation contractors and homeowners. No illustrated test, credential, authorization or compliance outcome should be represented as independently verified without source documentation.

Reference families for real implementation: current applicable ANSI/AARST radon measurement and mitigation standards; U.S. EPA radon guidance; state radon program rules and licensing requirements; property-specific contractual and disclosure obligations. Exact standards, editions, thresholds and legal duties must be confirmed for the jurisdiction and use case.