Approved Devices for Certified Professionals Doing Their Q.A.

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Listed Radon Measurement Devices

- In the United States, to ensure accuracy and prevent fraud in radon measurement devices are evaluated and listed
- Certified (and licensed) radon professionals conducting measurements in a commercial or real estate transactions
- Required to utilize devices that are listed by either NRSB or NRPP

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EPA's Original Device List

- The Original Device List was established in 1991 by the US EPA as part of their RPP program.
- Devices were grouped into categories
  - Passive – Charcoal, film – requiring analysis by a lab
  - Analytical – usually electronic, requiring analysis by a specifically trained operator and special equipment requiring analysis of data
  - RDP devices were also included
  - Consumer devices were not part of the listings

Device List History

- The Initial List
  - Devices that passed EPA's performance tests between 1986 and 1989 made up initial list
  - All devices added after 1991 were evaluated before being listed by EPA
  - Evaluation initially included
    - Review of design
    - Performance testing with chambers using known radon concentrations under various atmospheric conditions

Privatization

- In 1998, EPA discontinued its role in listing devices and requiring performance tests
- NRSB and NRPP began administering the existing but separate device lists and established similar criteria for evaluating new devices under their programs
- Most regulated states rely on the NRPP and NRSB listing

AARST-NRPP Device Evaluation

- NRPP Listed Devices™
  - Are Evaluated Against Set Criteria (using ANSI-AARST MS-PC Standard) to establish a standard bar of acceptable quality – on a pass fail basis during chamber exposures.
  - Only Professional Devices are listed
  - NRPP certified professionals may not use un-listed devices when determining the need for, or success of, mitigation. (i.e., when issuing a report to a client)

Non-listed Consumer Devices

- There is no national regulation defining consumer devices
- Electronic consumer devices are not illegal to sell
- They cannot be used by professionals to verify results or for measurement in a real estate/commercial transaction
- In most states, it is not illegal to use non-listed devices in research or diagnostic testing

NRPP's Device Evaluation Process

- The Device Evaluation Program (DEP) is designed to support the NRPP™ by evaluating new or modified radon and/or radon decay product measurement devices prior to their submittal by an individual or laboratory for a performance test.

- The DEP serves as a point of entry by assessing the instrumentation for suitability in the various categories of NRPP™ participation and providing information to manufacturers concerning adequate laboratory testing and documentation.

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NRPP's Device Evaluation Process

- Participants in the Device Evaluation Program are classified by the AARST-NRPP™ as device manufacturers (organizations that build or assemble radon measurement devices).

- Device manufacturers may or may not offer radon measurement services to the general public.

Device Evaluation Process

- Completed DEP Application – as determined by NRPP Technical staff

- Results from Required Blind Exposures using a NRPP approved secondary or performance radon chamber to check and verify accuracy
  - With data provided in application
  - Including initial manufacturer chamber data

Device Evaluation Process

- Results reviewed by qualified outside contractor
- If applicant is complete – approval is issued
- If application is incomplete:
  - More data may be requested from applicant
  - Expert TASC meeting may be required
  - Follow-up information/additional tests required
- No competitors are allowed on TASC review

Process for Undefined Devices

- New technology, new device categories
  - Manufacturers may submit request for new device category
  - Must submit suggested protocols for QA for
    - Manufacturing QA/QC
    - End user QA/QC
- TASC and Technical Contractor will review.

- Once a device, or a particular version of a device has successfully completed the DEP,
  - a device code number is assigned to the specific configuration of that device.
  - The device and device code will be listed by the NRPP™ in its literature as being approved by the DEP for submission by individuals desiring certification as Standard and Analytical Service providers or firms desiring certification as Analytical Laboratories.

- By completing a DEP application, the applicant agrees that no provisional language referring to either the US EPA or the AARST-NRPP™ may be used to market device until the applicant is in receipt of its final approval and authorization letter from the DEP.

- **As a condition of NRPP™ listing of the successfully evaluated device, the manufacturer agrees that they will not use any language referring to the AARST™ or NRPP™ in advertising, marketing or promoting the device until they receive a the final letter of approval from the DEP authorizing them to use the specific reference language "NRPP Listed Device™".**

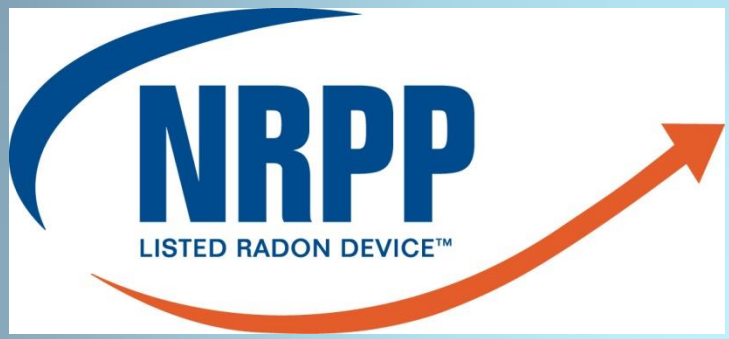
Period of Approval

- After a device has successfully completed the DEP, the device will continue to be listed by NRPP™ as long as its configuration and components remain unchanged in their design (see Section 1.3). However, the AARST-NRPP™ DEP reserves the right to request re-submittal of any approved or listed device for re-evaluation should updated performance criteria render this necessary.

Revocation

- The AARST-NRPP™ reserves the right to revoke listing or approval of any device as a result of the following circumstances:
  - A significant failure rate of individuals or firms submitting the device for performance tests.
  - Modifications to the design and operation of the device.
  - Improper representation or disclosure of AARST-NRPP™ approval or results of the DEP.
  - Failure to re-submit device for evaluation upon request from the AARST-NRPP™ DEP.

An integrated system requiring QA/QC



AARST- NRPP Policy

The NRPP Device Listing is not a guarantee that the device is accurate by itself.

AARST-NRPP does not validate the listing device unless the NRPP certified or state licensed professionals are performing QA/QC on a regular basis.

Maintaining certification QA is key.

Un-certified third parties using the NRPP devices cannot claim the measurement is accurate.

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- A listed device guarantees NOTHING.
- It warrants the device, as configured when evaluated, is capable of providing accurate results when used properly.
- It does not warrant
  - Quality of manufacturing process
  - Anything about consumer use or misuse
- Complaints about manufacturing quality are now part of NRPP Grievance Policy

Listed Device – Part of a System

- A part of an Integrated Quality Assurance Process that includes:
  - Radon reference standard
  - Performance chambers
  - Tertiary chambers
- This process requires certified professionals and labs to adhere to ongoing performance and QA/QC protocols

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Just Because It's A Pretty Box…

- Because a radon measurement device has fancy features and packaging, does not guarantee its accuracy.
- QA requires routine and discipline:
  - Calibrations
  - Spikes,
  - Duplicates
  - Blanks
  - Inter-comparisons
- Appropriate to each and every device

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Continuous Monitors

- Must produce readings at least hourly
- Annual calibration and backgrounds
  - Cross check with recently calibrated monitor every 6 months
- Duplicate measurement every 10th test
  - Duplicate when identical monitors are owned
  - With another approved device when a single monitor is owned
- Routine instrument checks

Charcoal-Based Devices

Activated Charcoal and Liquid Scintillation

- Calibration performed by laboratory
- Spikes at rate of 3% by laboratory AND users
- Duplicate measurements every 10th test
- Laboratory blanks & background checks
- Laboratory instrument checks daily
- Field blanks submitted by users every 20 tests

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Electret Ion Chambers

- Calibration annually
  - System calibration factors supplied by manufacturers
  - Reader calibrations required for users
- Spike measurements at a rate of 3%
- Duplicate measurements every 10th test
- Voltage stability tests for new shipments
- Background gamma correction
- Zero voltmeter and analyze reference electrets weekly (or more often)

Alpha Track Devices

- Calibration performed by laboratory
- Spikes at rate of 3% by laboratory AND users
- Duplicate measurements every 10th test
- Laboratory blanks
- Field blanks submitted by users every 20 tests
- Laboratory instrument checks daily

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Do It Right…

- Reliable and accurate measurements start by the use of an Approved Device.
- However, the device cannot produce a reliable test result by itself, regardless of the sophistication or cost.
- Users have an obligation to understand the device, it proper use, the responsibilities of the manufacturer or laboratory, and their Quality Assurance requirements.

QA with Quality Control…

- 1) Use an approved device.
- 2) Follow the protocols, and
- 3) Operate according to the manufacturer's or laboratory'sinstructions and your QA Plan, and
- 4) Document that you did 1), 2) and 3)

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