Compliance Inspection Program

Partnership:

American Association of Radon Scientists and Technologists and

Indiana Department of Health

Trust but Verify...Inspections of radon and vapor intrusion mitigation systems

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Soil Gas Mitigation Standards – Build it right

- Radon industry brings 40+ years of building science history and experience to the parallel field of Vapor Intrusion
- AARST / ANSI process has established several standards for **soil gas** mitigation
- New Construction Soil Gas Control
  - CC-1000-2018 – new construction soil gas control
  - AARST/ANSI CCAH 2013 – single family (SF)
- Soil Gas Mitigation
  - AARST/ANSI SGM-SF 2017 – single family (SF)
  - AARST/ANSI RMS-MF 2018 – multifamily (MF)
  - AARST/ANSI RMS-LB 2014 – residential care facility (RCF)
- https://standards.aarst.org/

IN Department of Health – Radon Mitigation Audit

- Project initially conceived, planned, and contracted in 2020 and 2021.

- In 2020 the goal of inspecting 60 mitigation systems was set and 53 were completed.
- In 2021 the goal of inspecting 100 mitigation systems was set and 100 were completed. In addition, the goal of 25 desk audits of primary radon testers was met.

  - Process for selecting homes from the state's mitigation report data
    - Random number generator
    - Emphasis on including at least one property per mitigator

- Compliance Program Goals
  - Data gathering
    - IDOH Radon Program was complaint-driven, so there were limited data on mitigation installations

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How IDOH Used the Inspection Results/Data

- Education
- Identification of common strengths/weaknesses
- Initial goal was to host a training/education session on the common deficiencies found – postponed due to COVID
- Code enforcement – deficiencies divided into “critical” and “non-critical”.
  - Critical deficiencies
    - Included fire/electrical hazards & re-entrainment issues
    - Required to go back, correct, and submit photos of corrected items
  - Non- critical deficiencies
    - Non-immediate threat to safety (improper labeling, insufficient seals, pipes not insulated, etc)
    - Required plan on how these will be avoided in the future

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Critical Deficiencies Found

	2021 Mitigation Inspections	2022 Mitigation Inspections
Deficiency	**% of Homes with this Deficiency**	**% of Homes with this Deficiency**
Fan is located next to gas meters or regulator vents	47%	70%
Pipe interferes with clearances (electric panel/combustion exhaust)	47%	1%
Exhaust Termination is NOT at least 1' above roof or 6' above edge alongside roof	26%	9%
Fire-rated components were altered - they are NOT still protected	21%	10%
Wiring does NOT appear to be safe and proper	21%	2%
Outdoor wiring is NOT protected in conduit & is plugged in	16%	4%
Wiring is running through radon pipe	13%	0%
Exhaust termination is NOT at least 1"above or 10" away from parapet or enclosing roof components	8%	1%
Pipe exhausts onto building materials	8%	1%
Exhaust is pointing down	5%	1%
Exhaust termination is NOT at least 10' above grade	5%	4%

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Non-Critical Issues Found

	2021 Mitigation Inspections	2022 Mitigation Inspections
Deficiency	**% of Homes with this Deficiency**	**% of Homes with this Deficiency**
OM&M Packet is NOT attached (or in appropriate location)	76%	71%
Electrical disconnects are NOT labeled (switched & outlets)	74%	45%
There is NOT an active notification monitor installed	74%	97%
Label does NOT have quarterly performance evaluation advisory	58%	52%
Label does NOT designate OM&M responsible party	55%	43%
Pipe is NOT insulated to prevent condensation	55%	0
Pipe is NOT insulated to prevent freezing	55%	0
Radon fan circuit is NOT labeled on electric panel	55%	70%
Piping is NOT labeled at least once per floor and every 10'	47%	20%
Pipe is NOT schedule 40 PVC or ABS or a permitted alternative	45%	29%

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Desk top Deficiencies

- 68% of participants with CRMs and 16% of participants with passive devices did not complete, document, or track their QA measurements per the standard.

- > 20% did not provide the following:

  - QA plan
  - Test report
  - Chain of custody
  - Audits
  - Location type
  - Calibration date
  - Mitigation system presence and operational status,
  - QA measurement (CRM or passive)
  - Training and qualifications of staff
  - Data validation
  - QAP reporting
  - Type of test
  - Device model or serial number
  - Recommendations based on results

Positive Outcomes

- Mitigators were open to the compliance inspections upon initial notification of the program.

- Contractors corrected 90 identified critical deficiencies
  - Some responded to identified concerns well ahead of when we requested info
  - Indicated a willingness to prove they do good work and care about their customers' health and safety needs

- Mitigators were willing to create a plan to avoid non-critical deficiencies in the future.
  - Again, many responded well ahead of the deadline.

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Positive Outcomes (continued)

- Program established a state-wide culture of compliance and quality.
- Program promotes equitable competition in the market by ensuring universal quality expectations.
- In project year 2, radon mitigators were more prepared and there were fewer critical and non-critical issues.
- Both radon mitigators and primary testers were happy to see the project begin and were willing to provide feedback on how to improve it.

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Lessons Learned

- Development of an electronic tool (instead of paper) for the field inspectors to use and report was a huge need realized after the first year.
- Photos validating every cited issue are critical
- Need to over-communicate on rationale, random selection, intent
- Need to ensure there are ample qualified inspectors who are willing to travel throughout Indiana
- Need to ensure that radon mitigators and primary testers know this project is spear headed by the IDOH.

Indiana Department of Health

Indiana Dept of Health – Contact info

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NRPP – Soil Gas Mitigation Compliance Inspector

Soil Gas Mitigation Compliance Inspector (SGM-CI)

The NRPP Soil Gas Mitigation Compliance Inspector is for those who inspect ASD systems to verify if the installation complies with the ANSI-AARST Soil-Gas Mitigation Standard. SGM Compliance Inspectors have access to the AARST mitigation inspection app used to perform a visual assessment and generate a compliance report. Their role is to represent home buyers by verifying if systems installed as part of a home sale meet the minimum standards, help resolve citizen complaints to NRPP, and assist state radon programs with compliance enforcement. **Cost: $210**

To obtain this **two-year** certification, the National Radon Proficiency Program requires:

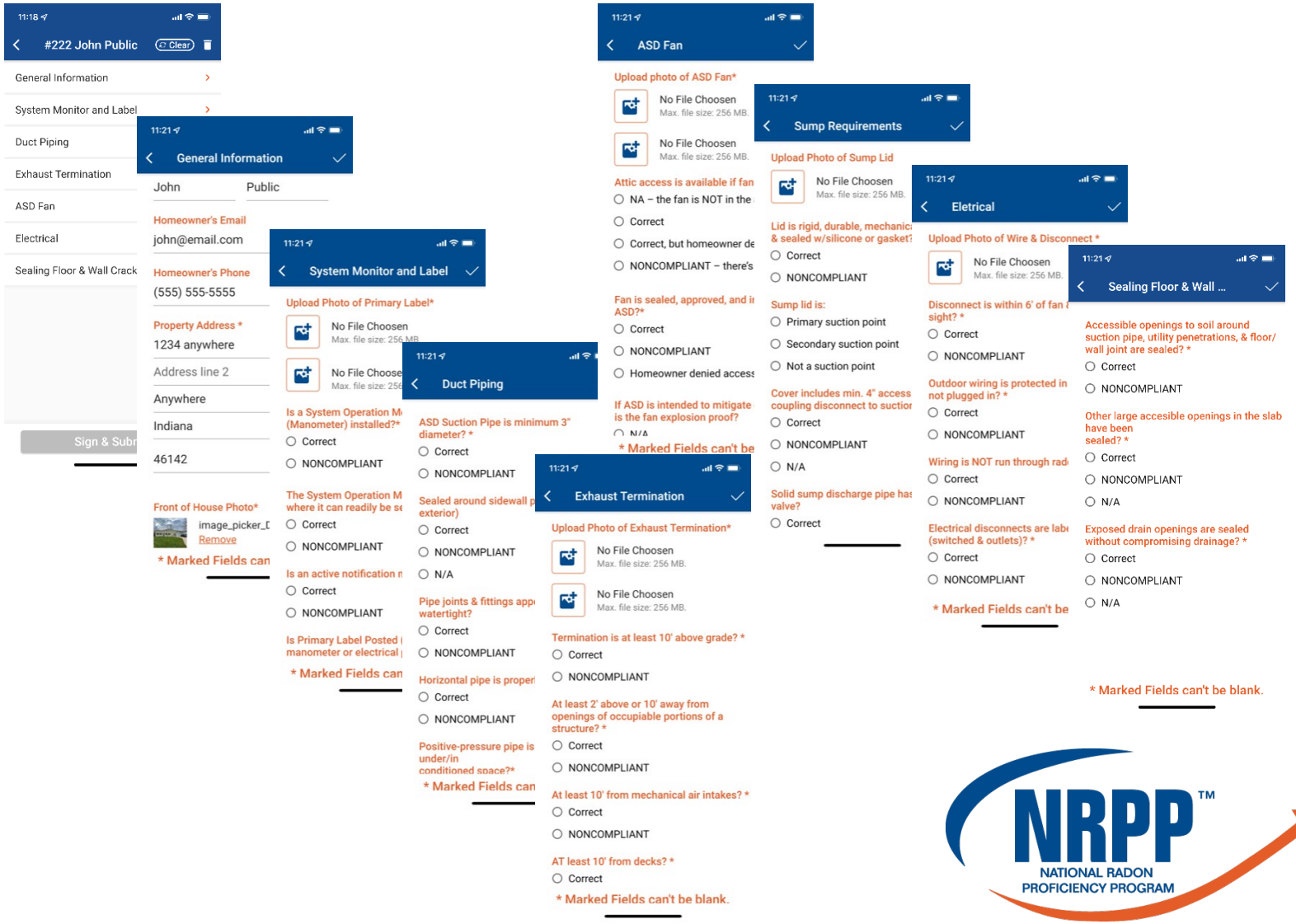
- Prerequisite: an NRPP Radon Measurement or Mitigation certification or approved relevant radon industry experience
- Completion of an 8-hour SGM Compliance Inspector **Initial Training Course** from an approved training provider
- Passing score on the **NRPP SGM Compliance Inspector Exam**
- 4 hours of SGM-CI specific continuing education biennially (*Category I only*)
- Adherence to the NRPP Code of Ethics & Certification Terms

NRPP™ NATIONAL RADON PROFICIENCY PROGRAM

Soil Gas Mitigation Compliance Inspection App

Standardize Inspections with mobile app

- Android & iPhone
- Free with certification
- 9 sections of collection
  - Project info
  - General Info
  - Monitor & Label
  - Duct Piping
  - Exhaust Termination
  - ASD Fan
  - Sump Requirements
  - Electrical
  - Sealing
- Compiles verification of conformance with standards and photos into a comprehensive report



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Questions?

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