Report of the
NYS Radon Task Force

Final Report
11/22/2023

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Executive Summary

The New York State (NYS) Radon Task Force was established by Chapter 414 of the Laws of 2018 to conduct a comprehensive study on the prevention of human exposure to radon and make recommendations to reduce and minimize exposure to New York state residents. The timeframe for the Task Force to (i) conduct a comprehensive study and (ii) file a report of the findings and recommendations of the Task Force, and any proposed legislation necessary to implement such findings, was extended multiple times, most recently by Chapter 57 of the Laws of 2022, Part CC section 10. The Task Force is chaired by the NYS Department of Health.

Specific items to be addressed include:

- The need for interagency coordination of public education and outreach and prevention programs
- The need for training, education, and possible licensing of radon services providers
- Any other related information that the commissioner of health may deem necessary or relevant in carrying out such study of radon in indoor settings

At the first meeting of the Task Force, the following additional topics were proposed for consideration:

- Radon control methods for new construction
- Radon testing and mitigation in schools
- Radon testing in daycare facilities
- Radon testing and mitigation as part of all real estate transactions
- Financial assistance and/or incentives for persons to test and mitigate their homes for radon
- Radon testing of drinking water
- Radon testing and mitigation in tenant-occupied buildings

Meeting dates, agendas and minutes can be found at
https://www.health.ny.gov/environmental/radon/

The Task Force has the following recommendations:

1. Interagency coordination of public education and outreach

The NYS Radon Task Force makes the following recommendations for interagency coordination of public education and outreach:

- ***The NYS Department of State has robust outreach through its Division of Consumer Protection. The taskforce recommends that outreach material be provided to the Division of Consumer Protection for inclusion in the educational information on its website. The Division of Consumer Protection could consider this information for inclusion in a public education and outreach campaign.***

- ***The NYS Department of State licenses or certifies a number of professions that relate to the building trades. The task force recommends that the NYS Department of Health Radon Program do the following:***

    - ***Work with the NYS Department of State to provide outreach through local code enforcement officials. Information on radon resistant new construction could be distributed with building permits for new construction and information on radon testing could be distributed with other types of building permits.***
    - ***Work with the NYS Department of State, the NYS Builders Association and local building associations to provide education on radon risk and radon resistant new construction that can be passed on to homeowners; encourage builders to offer radon resistant features in new construction projects, especially in high radon areas of the state.***
    - ***Work with the NYS Department of State and state/local real estate associations to obtain continuing education credits for optional training to real estate agents so that they can properly advise their clients on the risks of radon exposure and recommend testing as appropriate; encourage real estate agents to provide radon information to purchasers during home sales.***

- ***The New York State Energy Research and Development Authority (NYSERDA) has a number of home energy and weatherization programs (https://www.nyserda.ny.gov/All-Programs) which include home inspections and or modifications by an authorized contractor. The US Department of Energy currently requires that weatherization contractors provide radon information to their clients. This could be expanded to include contractors for other New York State Energy Research and Development Authority programs.***

- ***NYS Homes and Community Renewal provides grants to local housing authorities. Local housing authorities provide outreach and education to new homebuyers as well as grants for home purchases and repairs. Radon information could be provided to the local housing authorities through NYS Homes and Community Renewal to be distributed to grant applicants; however, new funding would be required to implement this recommendation.***

2. Licensure/certification of radon testers and mitigators performing work in NYS

The NYS Radon Task Force recommends adoption of Option 3 (as portrayed in the options on pages 14 through 16 of this report): NYS develops a licensing program where certification by third parties approved by NYS (e.g., National Radon Safety Board, National Radon Proficiency Program, or the NYS Department of Health's Environmental Laboratory Approval Program) is considered sufficient training and experience to obtain a NYS Radon Tester or Mitigator License.

The NYS Radon Task Force recommends Option 3, licensure of both individuals and businesses. This option requires businesses to be liable for their actions as well as those of

their employees. It also allows for oversight of and enforcement action against individual staff performing radon testing and mitigation, which will preclude an unsafe employee from working for another licensed radon business.

The NYS Radon Task Force recommends that radon tester and mitigator licensing be administered by the NYS Department of Labor; however, new funding from the licensing process would need to be used to offset the costs of the program. While all the proposed agencies have similar disadvantages regarding efforts needed to implement a new program, radon tester/mitigator licensing most closely aligns current NYS Department of Labor asbestos and mold licensing programs, insofar as subject (indoor home environment) and worker safety considerations.

The NYS Radon Task Force recommends that the enforcement mechanisms be not just complaint-driven, but also include an inspection component for mitigations whereby a certain number of installations for each mitigator are inspected each year. In addition, the Task Force recommends that a factsheet be developed for consumers in order that they may be able to determine whether their mitigation system is installed correctly.

Proposed language for legislation to implement radon tester and mitigator licensing in NYS is included as Attachment 3.

3. Radon control methods for new construction

The NYS Radon Task Force recommends that Appendix AF of the 2024 International Residential Code be considered for adoption into the NYS Residential Code by the State Fire Prevention and Building Code Council during the next update to the Uniform Fire Prevention and Building Code.

4. Radon testing and mitigation in schools

The NYS Radon Task Force recommends that the language in 8NYCRR 155.5(m) be revised to clarify what is meant by "be aware of the geological potential for high levels of radon and to test and mitigate as appropriate" specifically "geologic potential" and "high levels of radon" need to be defined. As any school building can have rooms with elevated radon levels, the Task Force further recommends that the NYS Education Department expand this regulation to include all school districts. In addition, the Task Force recommends that regulations and guidance reference current national standards for radon testing and mitigation in schools and large buildings.

5. Radon testing in daycare facilities.

The NYS Radon Task Force recommends that the requirement for radon testing of daycare facilities as part of an environmental hazards assessment be expanded to include daycare facilities in all areas of NYS.

6. Radon testing and mitigation as part of all real estate transactions

The NYS Radon Task Force recommends that NYS adopt a radon disclosure law like the lead paint disclosure law which requires the distribution of a pamphlet or other informational materials and a signature from the buyer acknowledging receipt of this information. In addition, the Task Force recommends that the NYS Real Property Law and associated regulations be amended to allow radon testing as part of a home inspection and allow training on radon testing to fulfill continuing education requirements for home inspectors.

7. Financial assistance/incentives for persons to test and mitigate their homes for radon

The NYS Radon Task Force recommends that Federal agencies, State agencies, local not-for-profits, and health insurance companies consider programs to encourage testing for radon and/or provide funding to subsidize the cost of installing a radon mitigation system. Options to consider include:

- ***Radon testing and mitigation is included in many green building programs (https://support.usgbc.org/hc/en-us/articles/4404406912403-What-is-LEED-certification). In addition to decreasing indoor radon levels, mitigation systems decrease soil vapor intrusion and moisture in basements. Reducing all three of these contaminants improves the overall healthiness of the home. Tax credits are available for some green building initiatives (https://greenhomeinstitute.org/green-building-remodeling-tax-credits). These could be expanded to include tax credits for radon mitigation.***
- ***Encourage the US Department of Housing and Urban Development and NYS Homes and Community Renewal to provide grants and other funding for radon mitigation to local non-profit housing organizations.***
- ***Encourage local non-profit housing organizations to leverage existing grant programs to help finance radon mitigation.***
- ***Modify existing programs such as the US Department of Energy Weatherization Program to allow for radon mitigation. The current program requires that the contractors provide homeowners with radon information, but the only mitigation technique that is approved is some limited sealing of cracks and other openings.***
- ***NYS should consider developing a funding mechanism for radon mitigation like what has been developed in other states (Colorado, Maine, Minnesota).***

8. Radon in drinking water

The NYS Radon Task Force recommends that the NYS Department of Health consider developing a guidance value for radon in drinking water. The guidance value should be accompanied by a fact sheet on radon in both public and private water supplies.

9. Radon testing and mitigation in tenant-occupied buildings

The NYS Radon Task Force recommends the following:

- ***Develop a law like the Residential Lead-Based Paint Hazard Reduction Act, wherein landlords would need to disclose elevated radon levels prior to renting.***

- ***Consider expanding the interpretation of the soil vapor intrusion disclosure to include radon.***

Introduction

Statement of The Radon Problem in New York State

NYS radon related activities began in the late 1970's. At that time, radon was raised as one of many possible indoor pollutants that could be enhanced because of the reduction of air infiltration rates for energy conservation purposes. The early studies were designed to examine the impact of household weatherization measures on indoor radon concentrations.

Following the discovery of very high levels of radon in homes located in Pennsylvania in December 1984, the US Environmental Protection Agency and several states, including NYS, became more active in carrying out a more diverse radon program. Several local health departments and counties have conducted radon surveys within their jurisdiction and others have participated in the state's radon program.

William J. Muszynski, PE, Acting Regional Administrator, US Environmental Protection Agency, Region II, requested that then Governor Mario Cuomo designate a lead state agency to administer New York State's radon programs required by Title III of the Indoor Radon Abatement Act of 1988, an amendment to the Toxic Substance Control Act.

In a letter dated July 7, 1989, former Governor Mario Cuomo designated the NYS Department of Health as the lead state agency to administer NYS's radon program and implement the above noted legislation.

Since 1986, the NYS Legislature has appropriated about 10 million dollars for radon services for New York State residents. These services include, or have included, a public information program, low-cost radon detector distribution to state residents, a training program in radon detection and mitigation for contractors, technical assistance, financial assistance to residents with elevated indoor radon concentration levels, and resources who may provide financial assistance.

Since June of 1987, the NYS Department of Health has distributed approximately 263,000 charcoal canister and alpha track radon detectors to residents of the State and obtained about 187,000 test results. Since basement screening measurements are not directly comparable to the US Environmental Protection Agency remedial action guidelines, these testing results do not reflect the fraction of homes in need of remediation. However, the data certainly does direct us to the counties and municipalities that need more extensive testing.

Local neighborhood studies and on-site field visits have shown large variation in radon levels from house to house over small geographical areas. These variations are due to a number of factors including local geology, house construction, heating and ventilating systems, and living habits of the house residents. Some areas with a high percentage of homes having elevated radon levels are associated with geologic formations of exposed or shallow bedrock containing relatively high radium concentrations. These include black shale in central NYS and granite in the lower Hudson Valley. Another area is central NYS where a large proportion of homes are built on highly permeable gravelly soils that have near average radium and radon concentrations.

These gravelly deposits form desirable building sites due to their excellent water drainage characteristics and they are often located in relatively flat river valleys. These gravelly deposits also allow rapid movement of radon through the soil. In such areas it is not uncommon to find 40% of the homes having basement radon screening measurements of 20 picocuries per liter or greater.

- Radon is a naturally occurring, radioactive gas found in soil and rock. It seeps into homes through cracks in the foundation, walls, and joints. Radon comes from the natural (radioactive) breakdown of uranium in soil, rock and water and gets into the air you breathe.
- Among nonsmokers, radon is the leading cause of lung cancer in the United States. Radon is the second leading cause of lung cancer, resulting in 21,000 deaths per year in the United States.
- 41 counties in NYS have average basement radon levels higher than the US Environmental Protection Agency's 4 picocuries per liter action level.
- Smoking has a synergistic effect with radon, which means that exposure to both cigarette smoke and radon greatly increases lung cancer risk.
- With a lifetime exposure at 4 picocuries per liter, it is estimated that 7 out of 1000 "never smokers" will develop lung cancer and 62 out of 1000 "smokers" will develop lung cancer. At 20 picocuries per liter, 36 out of 1000 "never smokers" will develop lung cancer and 260 out of 1000 "smokers" will develop lung cancer.
- The World Health Organization recommends an action level of 2.7 picocuries per liter.
- The average indoor radon level in NYS is 6.8 picocuries per liter. Cortland County has the biggest radon problem, with an average basement radon level over 14 picocuries per liter and an estimated 72% of homes with elevated radon levels.
- Radon is a greater health risk than many other regulated environmental contaminants. Exposure limits for other contaminants are set at a level that results in a risk of 1:10,000 to 1:1,000,000.

NYS Radon Task Force

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Specific items to be addressed include:

- The need for interagency coordination of public education and outreach and prevention programs
- The need for training, education, and possible licensing of radon services providers
- Any other related information that the Commissioner of Health may deem necessary or relevant in carrying out such study of radon in indoor settings

A report of the findings and recommendations of the task force and any proposed legislation necessary to implement such findings shall be filed with the governor, the temporary president of the senate, the speaker of the assembly, the minority leader of the senate, and the minority leader of the assembly on or before November 1, 2022.

The NYS Radon Task Force consists of the following members:

Name	**Seat Category**
VACANT	Governor's Appointee – Real Estate Representative
George Schambach	Governor's Appointee – Radon Testing & Mitigation Expert
Richard Kornbluth	Temporary President of the Senate Appointee
VACANT	Speaker of the Assembly Appointee
John Addario, Director Division of Building Standards & Codes	Secretary of State or Designee
Gary Ginsberg, Director Center for Environmental Health	NYS Department of Health Commissioner or Designee
Selica Grant Chief Risk Officer and Special Counsel	NYS Department of Labor Commissioner or Designee (left July 25, 2022)
Darren Cohen Deputy Commissioner for Policy, Strategy and Research	NYS Department of Labor Commissioner or Designee (appointed July 25, 2022)

At the first meeting of the Radon Task Force on October 6, 2021, it was agreed that the following issues would be discussed, and that the Task Force would make recommendations to address these issues.

- Interagency coordination of public education and outreach.
- Licensure/certification of radon testers and mitigators performing work in NYS.
- Radon control methods for new construction.
- Radon testing and mitigation in schools.
- Radon testing in daycare facilities.
- Radon testing and mitigation as part of all real estate transactions.

- Financial assistance and/or incentives for persons to test and mitigate their homes for radon.
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Meeting dates, agendas and minutes can be found at
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1. Interagency coordination of public education and outreach

Background

The NYS Department of Health has a Radon Outreach and Education Program funded through the US Environmental Protection Agency's State Indoor Radon Grant. This program encourages testing of homes and schools and mitigation of elevated radon levels. With anticipated cuts to US Environmental Protection Agency programs, continued funding through this grant is in jeopardy.

The NYS Radon Program is located within the NYS Department of Health, Center for Environmental Health, Bureau of Environmental Radiation Protection. The Bureau of Environmental Radiation Protection partners with other bureaus within the health department to manage the following projects:

Partnership with High-Risk Counties: Approximately $100,000 per year is passed through to county health departments in high-risk areas. Ten to twelve counties participate per contract cycle. The goal of this program is to promote radon outreach and education at the local level.

Public Information Program: There are three goals for this project: promote radon testing and provide radon information to members of the public, provide free and low-cost radon detectors to NYS residents; and interface with other radon professionals. The NYS Department of Health maintains a radon hotline number and a dedicated email address for members of the public to contact the radon program with questions. There is also a radon information page (www.health.ny.gov/radon) on the department's website. The Radon Program provides information tables at various venues (home shows, health fairs, etc.) The Radon Program also maintains a contract with a radon testing laboratory to provide free and low-cost radon tests to NYS residents.

Education and Technical Support for Industry Best Practices and Standards: There are five goals for this project: compliance with 10 NYCRR Part 16.130, adoption of a Radon Resistant New Construction building code, licensing of radon professionals; increased testing of newly built homes; and provision of training on standards of practice for all audiences. The NYS Department of Health has increased outreach to radon testers and mitigators in regard to reporting required under 10 NYCRR Part 16.130. Compliance has improved substantially. The NYS Department of Health periodically contracts with the Eastern Regional Radon Training Center at Rutgers University to bring radon testing and mitigation training to NYS. They also

partner with the NY Chapter of the American Association of Radon Scientists and Technicians to provide radon training in conjunction with the annual radon stakeholder's meeting. Little progress has been made on the adoption of the Radon Resistant New Construction building code or licensing of radon professionals. Recommendations of the Radon Task force should provide some impetus for these projects.

Schools Outreach, Screening and Guidance: The goal of this project is to promote radon testing and provide radon information to school and educational facilities. In the past, the Radon Program has partnered with the Bureau of Toxic Substance Assessment, and the NYS Education Department to provide a series of workshops to administrators and facility maintenance staff through regional Bureau of Cooperative Educational Services (BOCES) offices. These workshops focused on indoor air issues, including radon. This program also provides technical support and half-price radon test kits to school districts that wish to test for radon.

Outreach to the Medical Community: The goals of this project are to: expand and continue radon testing of homes of newborns, provide information on radon risk to members of the medical community, include radon in Environmental Public Health Tracking, and emphasize radon exposure risk in the NYS Department of Health Cancer Control Plan. The NYS Department of Health sends radon information packets with an application for a free radon detector to hospitals to provide to new mothers. This is one of the NYS Department of Health's most successful radon outreach programs. Radon testing data and maps are available on the NYS Environmental Public Health Tracking website: https://www.health.ny.gov/environmental/public_health_tracking/. Data is updated annually. The current NYS Cancer Control Plan has several recommendations related to reducing radon exposure: http://www.nyscancerconsortium.org/cancer/cancer_index.aspx and the NYS Prevention Agenda has several radon-related health indicators: https://health.ny.gov/prevention/prevention_agenda/2019-2024/

Public Education: This project is a partnership with the Bureau of Health Media and Marketing and the Center for Environmental Health's Outreach and Education Unit to design and print radon educational materials and support outreach efforts as they occur.

Support of Central New York Coalition for Healthy Indoor Air: The Central New York Coalition for Healthy Indoor Air is made up of a group of organizations committed to a goal of healthy indoor environments for individuals and families within communities, regardless of their income, education or other limiting resources. Core counties serviced by the coalition include Broome, Chemung, Cortland, Madison, Tompkins, and Tioga, but they will provide services in adjacent counties. The goals of this project are to increase awareness of radon risks in the targeted area and provide radon mitigation demonstrations and training. The Central New York Coalition for Healthy Indoor Air offers mini grants to local counties and non-profit agencies to do small radon outreach projects. They have also partnered with the NYS Weatherization Directors Association, the Green and Healthy Homes Initiative, Habitat for Humanity, and local Bureau of Cooperative Educational Services (BOCES) offices to provide training and install demonstration mitigation systems that can be used as models for additional projects.

Healthy Neighborhood Program: The NYS Radon Program has partnered with the Bureau of Community Environmental Health and Food Protection's Healthy Neighborhoods Program. The goal of this project is to encourage radon testing and mitigation in targeted neighborhoods. The Healthy Neighborhoods Program is a door-to-door community-based program designed to provide preventive environmental health services to targeted geographic areas with a high rate of documented unmet environmental health needs. These unmet needs often result in adverse health outcomes for the residents. The Healthy Neighborhoods Program provides free radon test kits and information on the risks of radon exposure to clients.

The NYS Radon Task Force makes the following recommendations for interagency coordination of public education and outreach:

- ***The NYS Department of State has robust outreach through its Division of Consumer Protection. The task force recommends that outreach material be provided to the Division of Consumer Protection for inclusion in the educational information on its website. The Division of Consumer Protection could consider this information for inclusion in a public education and outreach campaign.***

- ***The NYS Department of State licenses or certifies a number of professions that relate to the building trades. The task force recommends that the NYS Department of Health Radon Program do the following:***

    - ***Work with the NYS Department of State to provide outreach through local code enforcement officials. Information on radon resistant new construction could be distributed with building permits for new construction and information on radon testing could be distributed with other types of building permits.***
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- ***NYS Homes and Community Renewal provides grants to local housing authorities. Local housing authorities provide outreach and education to new homebuyers as well as grants for home purchases and repairs. Radon information could be provided to the local housing authorities through NYS Homes and Community Renewal to be distributed to grant applicants; however, new funding would be required to implement this recommendation.***

2. Licensure/certification of radon testers and mitigators performing work in NYS

Background

The only way to know if a home has an elevated radon level is to test. If radon levels are elevated, a mitigation system should be installed to decrease them. Currently, there are no training and experience or licensure/certification requirements for radon testing and mitigation professionals in NYS.

There are a number of radon testers and mitigators who are untrained and/or do not work in accordance with national standards. If radon testing and mitigation are not properly performed, risks from radon exposure are not decreased. Without a requirement for a NYS license or certification, there is no recourse to address this situation. See Attachment 1 for examples of improperly installed mitigation systems.

Twenty states (including the adjoining states of Connecticut, Pennsylvania, and New Jersey) currently require some sort of certification or licensure of radon testers and mitigators.

	Required Credential(s)		Current Standard(s) in Effect	
State	Certification	License	American National Standards Institute – American Association of Radon Scientists and Technicians (ANSI-AARST)	US Environmental Protection Agency (EPA), American Society for Testing and Materials (ASTM), other
California	X		All standards	
Colorado*	X	X	All standards	
Connecticut	X		All standards	
Florida		X	(rule proposal underway)	All standards
Illinois		X	Multifamily	Single Family
Indiana*	X	X	All standards	
Iowa		X	Measurement	Mitigation
Kansas		X	(rule proposal underway)	All standards

State	Required Credential(s)		Current Standard(s) in Effect	
	Certification	License	American National Standards Institute – American Association of Radon Scientists and Technicians (ANSI-AARST)	US Environmental Protection Agency (EPA), American Society for Testing and Materials (ASTM), other
Kentucky*	**X**	**X**	**All standards**	
Maine		**X**		**All standards**
Minnesota		**X**	**All standards**	
Nebraska		**X**		**All standards**
New Hampshire	**Mitigation**		**Mitigation**	
New Jersey		**X**	**(rule proposal underway)**	**All standards**
Ohio		**X**		**All standards**
Pennsylvania		**X**	**Multifamily**	**Single Family**
Rhode Island*	**X**	**X**	**All standards**	
Utah	**Mitigation**		**Mitigation**	
Virginia	**X**			**Single Family**
West Virginia		**X**	**All standards**	

* Both license and private certification required

Questions to be addressed:

- Should NYS require credentialling of radon testers and mitigators?
- What type of credential should be required?
  - Licensing of individuals, business, or both
  - Nationally accredited certification of testing and/or mitigation professionals
- Which NYS agency should regulate the radon testers and mitigators?
- How should the regulations be enforced?

Credentialling

After a brief discussion of the types of errors that often happen when radon testing or mitigation is performed by a non-credentialled contractor, members of the Task Force agreed that NYS should implement some sort of a regulatory program for radon testing and mitigation.

There are several options for credentialling radon testers and mitigators:

1. Require certification by an accredited organization.
2. Require a state license through a testing program administered by NYS.
3. Require a state license through recognition of certification by an accredited organization.

Option 1 would entail legislation requiring that radon testers and mitigators be certified by a credentialled accrediting body. Currently, there are two national certification organizations (the National Radon Safety Board - NRSB and the National Radon Proficiency Program - NRPP), as well as a NYS Department of Health program (Environmental Laboratory Approval Program - ELAP), which only certifies testers. It should be noted that radon testing laboratories, and radon testers using continuous radon monitors or electrets, would still need to be certified by the NYS Department of Health's Environmental Laboratory Approval Program, regardless of what other credentialling requirements are implemented.

This would be the simplest program to implement but would not include enforcement at the statewide level.

Advantages

- Cost to state would be minimal as all program administration would be handled by the credentialling organization.

Disadvantages

- The State has no control over the program (requirements for certification, penalties for violations, etc.).
- Penalties for operating without proper credentials would be under the purview of the state; violators would only be identified through complaints.
- Enforcement would be through credentialing body and likely involve suspension or revocation of certification.

Option 2 would require that NYS develop a program of required training and a licensing exam. It would not recognize certification by the National Radon Safety Board, National Radon Proficiency Program, or the NYS Department of Health's Environmental Laboratory Approval Program as sufficient training and experience to obtain a NYS Radon Tester or Mitigator License. It should be noted that radon testing laboratories, and radon testers using continuous radon monitors or electrets, would still need to be certified by the NYS Department of Health's Environmental Laboratory Approval Program regardless of what other credentialling requirements are implemented.

Advantages

- NYS would have complete control of program.
- The State can set its own standards, different or above and beyond requirements of national standards.

- Enforcement could involve fines and other penalties in addition to suspension or revocation of certification.

Disadvantages

- Developing an entire program from scratch would be costly and time-consuming.
- Ongoing costs associated with verification of training and administering exams.

Option 3 would require that NYS develop a licensing program where certification by National Radon Safety Board, National Radon Proficiency Program, or the NYS Department of Health's Environmental Laboratory Approval Program is considered sufficient training and experience to obtain a NYS Radon Tester or Mitigator License. It should be noted that radon testing laboratories, and radon testers using continuous radon monitors or electrets, would still need to be certified by the NYS Department of Health's Environmental Laboratory Approval Program, regardless of what other credentialling requirements are implemented.

Advantages

- The State has limited involvement in program administration as training and examinations are provided by a national organization.
- The State has control over licensing which allows enforcement (fines and other penalties) in addition to actions that may be taken by national certification organizations.
- Less expensive to implement than option 2 as a large portion of program administration still falls to the national credentialling organizations.
- License fees would generate revenue for the State.

Disadvantages

- Training, continuing education, and examination requirements are controlled by the credentialling bodies.

The NYS Radon Task Force recommends adoption of Option 3: NYS develops a licensing program where certification by third parties approved by NYS (e.g., National Radon Safety Board, National Radon Proficiency Program, or the NYS Department of Health's Environmental Laboratory Approval Program) is considered sufficient training and experience to obtain a NYS Radon Tester or Mitigator License.

Credentialling of Individuals and/or Businesses

A second issue with credentialling is whether to credential individuals, businesses, or both. Both the National Radon Safety Board and the National Radon Proficiency Program, currently certify individuals as either technicians or supervisors. The NYS Department of Health's Environmental Laboratory Approval Program certifies businesses. A qualified laboratory director is required for a business to be certified by the NYS Department of Health's Environmental Laboratory Approval Program.

Currently, many radon testing and mitigation companies have multiple employees performing radon tests and mitigations, yet only one person may be certified by the National Radon Safety Board or the National Radon Proficiency Program. This means that the certified individual may not ever be on the job site or review/approve the design of a mitigation system.

For there to be proper oversight of a mitigation job, the business needs to have responsibility for ensuring qualified individuals are performing testing and installing mitigation systems.

Option 1 would require licensure of individuals. Under this model, licenses would be issued to qualified radon testing/mitigation supervisors and qualified radon testing/mitigation technicians.

Advantages

- Enable state to track where licensed/certified professionals are working.

Disadvantages

- In the absence of licensing requirements for the business, there is no way to ensure that all work is being supervised and done by licensed/certified individuals.
- In the absence of licensing requirements for the business, there is no way to enforce requirements that work is done in accordance with national standards.

Option 2 would require licensure of businesses. Under this model, the license would be issued to the business. To qualify for a license, the business would need to have a qualified radon testing/mitigation supervisor and qualified radon testing/mitigation technicians on staff at each physical location where the business operates.

Advantages

- Adherence to testing and mitigation standards would be required by the licensee.
- Enables licensing agency to create a probationary period where a certain percentage of the first X projects after licensure would be inspected either in-person or remotely using pictures and documentation.
- Testers currently must provide a quality assurance plan as part of the NYS Department of Health's Environmental Laboratory Approval Program requirements. This will extend that requirement to mitigation businesses also.
- Oversight agency can require businesses to provide customers with information fact sheets about testing protocols and installation standards as part of the contract process and document that customers have received them.
- Increases likelihood that work will be done in accordance with national standards.

Disadvantages

- Additional cost to monitor and enforce business compliance.

Option 3 would require licensure of both individuals and businesses. Under this model, the license would be issued to the business as well as the qualified radon testing/mitigation supervisor(s) and qualified radon testing/mitigation technician(s) on staff at each physical location where the business operates.

Advantages

- Same as for option 2.
- Easier to track where certified professionals are working, although this could still be done in option 2 by requiring licensed businesses to supply a list of licensed/certified employees.
- NYS can suspend the license of a technician without having to affect the license of the business that the technician is working for (advantage for business).

Disadvantages

- Expense of monitoring and enforcement is greater than in option 2.
- Will need to track both individuals and businesses.

The NYS Radon Task Force recommends Option 3, licensure of both individuals and businesses. This option requires businesses to be liable for their actions as well as those of their employees. It also allows for oversight of and enforcement action against individual staff performing radon testing and mitigation, which will preclude an unsafe employee from working for another licensed radon business.

Agency Jurisdiction

There are several NYS agencies being considered to manage the NYS Radon Tester/Mitigator Licensing Program: Department of Labor, Department of State, Department of Health, Department of Environmental Conservation, and Department of Education.

Regardless of which agency is recommended, all State agencies face common barriers to implementing a new program. These common barriers include:

- The initial or startup costs of implementing a new regulatory program, including promulgating regulations, developing a database to track licensees, hiring/training staff, etc. The legislature would need to provide initial funding to the agency to start the program; ongoing costs would be funded by fees collected for licenses.
- None of the agencies being considered currently have staff with technical expertise in radon mitigation.
- Need for information technology support to develop any applications or funds to purchase potentially existing applications for the licensing process, tracking complaints and inspections, and potential enforcement.

- Agency would need to hire new staff; train existing staff in radon testing and mitigation guidelines, building practices and codes, and technical elements of the construction trades; or hire contractual staffing.
- Agency would need to establish a separate programmatic effort to license radon testing and mitigation even if the agency already licenses other activities.

The **NYS Department of Labor** has asbestos and mold regulatory programs. The NYS Department of Labor's regulatory authority over asbestos activities is aimed at protecting the public from exposure to asbestos, a known carcinogen. The NYS Department of Labor also regulates mold assessment, abatement and remediation aiming to protect consumers from untrained contractors. The NYS Department of Labor has licensing programs for both asbestos and mold. In both cases, The NYS Department of Labor licenses those that do the testing as well as those that mitigate (abate). This is analogous to radon as some companies only test for radon while others only perform mitigation. In relation to the mold program, The NYS Department of Labor approves training courses that are required for individual certifications in these fields. However, for asbestos training, the NYS Department of Health approves the training programs. The NYS Department of Labor requires staff with technical knowledge in these safety and health programs to address complaints and malpractice. The Legislature could consider adding to the regulatory authority of the NYS Department of State to include radon testing and mitigation. Although the NYS Department of Labor does not currently have in house radon expertise, other state (e.g., NYS Department of Health) and national organizations are available to provide technical assistance to the NYS Department of Labor and offer training in this area. Finally, some of the companies licensed by the NYS Department of Labor to perform mold testing are also offering home inspection and radon testing services. Thus, there may be efficiencies in outreach, education and record-keeping should The NYS Department of Labor perform a licensing function for radon testing and mitigation.

Advantages

- Currently licenses similar professions (mold and asbestos testing and mitigation), both businesses and individuals.
- Licensing of radon mitigation contractors fits within the NYS Department of Labor's mission of protecting worker health and safety.
- The NYS Department of Labor reviews and approves training courses for mold contractors like what is needed for radon contractors.
- Performs inspections for all asbestos abatement related activities.
- Has State-wide inspection staff that can be trained for radon testing and mitigation inspection.
- Has engineers on staff that can be trained in radon testing and mitigation.
- By licensing mold and asbestos contractors, may be dealing with many of the same companies that perform radon testing and mitigation.

Disadvantages

- The NYS Department of Labor has civil enforcement authority to act against mold contractors with the goal of correction, higher level enforcement referred to the Attorney General's office.
- The NYS Department of Labor would need to establish a separate programmatic effort to license radon testing and mitigation which would require initial startup funding and increased staffing; while this may be made easier by the advantages mentioned above, considerable effort would still be needed to set up a new licensing program within the NYS Department of Labor.

The **NYS Department of State** currently licenses other occupations such as: home inspectors; security and fire alarm installers; and manufactured homes installers and service persons. As the NYS Department of State regulates 36 occupations, the Legislature could consider adding to the regulatory authority of the NYS Department of State to include radon testing and mitigation, though the NYS Department of State advises that radon testing and mitigation are specialized and not similar to other programs currently administered there.

Advantages

- The NYS Department of State has experience administering licensing programs.
- Many of the same companies offering radon testing also offer home inspection services and are already licensed by the NYS Department of State.
- The NYS Department of State's home inspector laws and regulations could be modified to include radon testing.

Disadvantages

- Current enforcement mechanisms are not specialized; unlicensed activity is referred to the Attorney General for follow-up.
- While the NYS Department of State currently licenses home inspectors, and the radon testers are largely the same population, the NYS Department of State would need to set up new program. The current statute (Article 12-B, Real Property Law § 444-b.4) expressly omits radon testing from the permitted home inspection scope of services.
- The NYS Department of State has no expertise in licensing, testing, or establishing standards that are appropriate to properly license and administer a program in radon testing.

The **NYS Department of Health** houses the Bureau of Environmental Radiation Protection, which is tasked with protecting the public from unnecessary radiation exposure. The primary focus of the Bureau of Environmental Radiation Protection is regulatory in nature, consisting of licensing, registration, and inspection of facilities that use radioactive materials and/or radiation-producing equipment. The Bureau of Environmental Radiation Protection also licenses radiologic technologists, radiation therapy technologists and nuclear medicine technologists.

The Legislature could consider adding to the regulatory authority of the NYS Department of Health to include radon testing and mitigation.

The Bureau of Environmental Radiation Protection houses the NYS Radon Outreach and Education Program, which has been operating for more than 30 years. The primary focus of the Radon Program is to educate NYS residents on the risks of radon exposure, encourage radon testing and mitigation, if necessary. A full description of this program is included under the background section earlier in this report. The Radon Program is funded through the US Environmental Protection Agency's State Indoor Radon Grants Program. Although the Bureau of Environmental Radiation Protection has experience with licensing and radon, this experience does not translate well into a licensing program for radon testers and mitigators. Bureau of Environmental Radiation Protection staff consist of health physicists who have expertise in radiation protection; they do not have the expertise in engineering or construction needed for overseeing radon mitigation work. Radiologic technologists, radiation therapy technologists and nuclear medicine technologists are medical professionals who have graduated from a professional degree program. Radon testers and mitigators are building professionals without any degree requirements and undergo training and certification from national organizations that are not under the NYS Department of Health authority or purview.

Advantages

- The NYS Department of Health has experience and expertise in providing outreach and education to the public about health effects of exposure to radon and providing guidance on testing and mitigation requirements.
- The NYS Department of Health's Environmental Laboratory Approval Program already certifies radon testing laboratories, including radon testers who employ continuous radon monitors or electrets.
- Radon testers and mitigators are used to interacting with the NYS Department of Health as 10 NYCRR 16.130 requires that the number of radon tests and mitigations performed in each county be reported to the NYS Department of Health twice a year.
- The NYS Department of Health has experience with licensing programs.
- The NYS Department of Health has a civil enforcement mechanism through the Administrative Tribunal (AT-10) process and hearings.

Disadvantages

- The NYS Department of Health Bureau of Environmental Radiation Protection staff can provide information on the basics of radon mitigation but do not have direct experience with design or installation of mitigation systems.
- While the NYS Department of Health has licensing programs for medical professionals who use radiation and radioactive materials, this new program would require a separate application development and enforcement process as the professions licensed by the NYS Department of Health are completely unrelated to radon testing and mitigation in terms of training, credentialing, on the job health risks, and technical functions and activities.
- Bureau of Environmental Radiation Protection staff are scientists and health physicists who have no experience in engineering, construction business, or associated trades.

The **NYS Department of Environmental Conservation** regulates the disposal or release of licensed radioactive materials to the environment under 6 NYCRR Part 380. The radioactive effluent permit portion of the NYS Radiation Control Program, which regulates allowable releases to air, water, and sanitary sewer systems, is housed within the NYS Department of Environmental Conservation and is managed by trained staff with expertise in radiation. Naturally occurring radon is not regulated by the NYS Department of Environmental Conservation. The Legislature could consider adding to the regulatory authority of the NYS Department of Environmental Conservation to include radon testing and mitigation. The NYS Department of Environmental Conservation remedial program staff do possess some expertise in radon mitigation system installation and maintenance stemming from the routine use of sub-slab depressurization systems to mitigate potential exposures to volatile organic chemicals in occupied buildings via soil vapor intrusion. The NYS Department of Environmental Conservation works closely with the NYS Department of Health to ensure that systems are installed by qualified radon mitigation firms certified by the National Radon Safety Board or the National Radon Proficiency Program. Contractors used by the NYS Department of Environmental Conservation for sub-slab depressurization system installations are expected to adhere to design and performance criteria established by the US Environmental Protection Agency and the American Society for Testing and Materials for design and construction of radon mitigation systems. The NYS Department of Environmental Conservation currently issues licenses for hunting, fishing, and trapping as well as recreation guides, wildlife rehabilitators, and commercial fishing. Licensing fish and game activities does not demand much in the way of technical review or application of engineering and scientific principles. While certain divisions within the NYS Department of Environmental Conservation are staffed with licensed engineers and technical staff experienced in the fields of engineering or construction, a very limited number of staff possess the expertise in radon testing and mitigation that would be required to implement a licensing program.

Advantages

- The state Radiation Control Programs and therefore Radon Programs in New Jersey and Pennsylvania are housed in their environmental agency.
- Many NYS Department of Environmental Conservation staff are engineers and therefore have expertise in inspections.
- The NYS Department of Environmental Conservation has certification programs (e.g., pesticide applicator, wastewater treatment plant operator).
- The NYS Department of Environmental Conservation routinely oversees installation of sub-slab depressurizations systems for soil vapor intrusion. This is the same system used for most radon mitigations.

Disadvantages

- Current NYS Department of Environmental Conservation regulations specifically exempt radon as it is a naturally occurring radioactive material.

The **NYS Education Department** currently licenses over 50 professions. Guided by the Regents, a citizen body, the professions are within New York State's unified system of education - The University of the State of New York. This recognizes the key role education plays in both preparing licensed professionals and in ensuring their continuous development.

The NYS Education Department, under Regents' direction, administers professional regulation through its Office of the Professions, assisted by the State Boards for the Professions. The Legislature could consider adding to the regulatory authority of the NYS Education Department to include radon testing and mitigation.

Advantages

- Currently licenses over 50 professions.
- Currently has a Professional Misconduct Enforcement System which has a range of penalties including censure and reprimand, fines (up to $10,000 for each violation), suspensions and/or probationary terms.
- Memorandum of understanding exists with NYS Department of Health for physician, physician assistant, and specialist assistant enforcement actions.

Disadvantages

- The NYS Education Department licenses individuals who have gone through approved higher education programs.
- There is not an approved higher education program for radon contractors

The NYS Radon Task Force recommends that radon tester and mitigator licensing be administered by the NYS Department of Labor; however, new funding from the licensing process would need to be used to offset the costs of the program. While all the proposed agencies have similar disadvantages regarding efforts needed to implement a new program, radon tester/mitigator licensing most closely aligns current NYS Department of Labor asbestos and mold licensing programs, insofar as subject (indoor home environment) and worker safety considerations.

Enforcement

There are two types of enforcement. The first is complaint-driven whereby an investigation is initiated in response to a consumer complaint. Professional licensing of individuals such as physicians, nurses etc., is most often complaint driven enforcement. The second type is inspection driven, whereby an enforcement officer performs an inspection to make sure that activities were performed in accordance with accepted standards and regulations. Business and facilities are often subject to routine or periodic inspections to evaluate compliance.

Professional licensing laws typically include a section on enforcement, penalties and exemptions or exempt individuals. The law will usually address penalties for unlicensed activities, unethical conduct, minimum standards, or a designation for the agency to set minimum standards in regulations, and exemptions for individual who may perform these activities, such as homeowners and agency staff.

Since there is currently no licensing or certification requirements for radon tests or mitigators and there is also no requirement to follow any standard or procedure when performing radon testing or mitigation, complainants are advised to contact the Attorney General's Office, the Better Business Bureau, and/or the organization that certifies the tester or mitigator.

There are approximately 175 certified radon testers in NYS. This number is expected to increase substantially if certification or licensure are required. Since nearly 100,000 radon tests are performed in NYS each year and the testing period ranges from two to seven days (with the vast majority being 48-hour tests) it's not possible to observe each radon test to be sure that it is being performed correctly. Therefore, any investigation or enforcement of radon testing activities would need to be complaint driven. Since the average consumer would not know whether their radon test was performed correctly, complaints would mostly be reports of unlicensed radon testers provided by other radon testers. The NYS Department of Health's Environmental Laboratory Approval Program does inspect their certified radon testing laboratories and radon testers using continuous radon monitors and electrets on a biannual basis. This inspection includes verifying equipment, deployment, data handling, documentation, and reporting. The NYS Department of Health's Environmental Laboratory Approval Program's inspection checklist is included as Attachment 2.

There are approximately 70 certified radon mitigators performing nearly 5000 radon mitigations (as reported to the NYS Department of Health) in NYS each year. This number is also expected to substantially increase if licensing or certification is required. As an improperly installed mitigation system may not lower radon levels and could even increase them in a home, it is important to ensure proper installation. Since most consumers will not know if their mitigation system has been installed properly (unless a radon test confirms levels are still elevated) consumer complaints will be limited.

There are too many mitigation installations to inspect each one, though a percentage of each mitigator's installations could be inspected each year. None of the state agencies previously mentioned currently have the expertise to inspect a radon mitigation system. Code enforcement officers also lack expertise and since radon mitigation is not in the residential building code, there are no regulations for them to inspect against.

Options for inspection include the regulatory agency employing properly trained staff or contracting with a third party to perform inspections.

There is now training and certification through the National Radon Proficiency Program available for inspecting radon mitigation systems (https://nrpp.info/sgm-compliance-inspector-exam-cert-now-available/). Initial program funding for the proposed NYS regulatory agency

should include cost of training and certification for a number of individuals who would be authorized to do these inspections.

A good example of third-party inspections is the program employed by Indiana. The Indiana State Department of Health contracted with the American Association of Radon Scientists and Technicians to provide licensed and certified radon mitigators to inspect a percentage of the radon mitigation systems installed in the state each year. This allowed Indiana to provide oversight of the inspection program without having to hire staff to perform the inspections.

The NYS Radon Task Force recommends that the enforcement mechanisms be not just complaint-driven, but also include an inspection component for mitigations, whereby a certain number of installations for each mitigator are inspected each year. In addition, the Task Force recommends that a factsheet be developed for consumers in order that they may be able to determine whether their mitigation system is installed correctly.

Proposed language for legislation to implement radon tester and mitigator licensing in NYS is included as Attachment 3.

3. Radon control methods for new construction

Background

New homes can be built radon resistant by installing a passive radon mitigation system. These systems potentially cut indoor radon levels by up to 50 percent and can be made into an active system by the addition of a suction fan. In addition to decreasing indoor radon levels, mitigation systems have been shown to decrease basement moisture and intrusion of other soil gases. Radon-resistant construction techniques are considered green technology, consistent with state-of-the-art energy-efficient construction, and may reduce the homeowner's carbon footprint.

Appendix F "Passive Radon Gas Controls" to the 2018 International Residential Code (https://codes.iccsafe.org/content/NYSRC2020P1/appendix-f-radon-control-methods) is currently optional in NYS. It appears that the plan for the NYS Residential Code is to forego adoption of the 2021 International Residential Code and instead wait for the 2024 International Residential Code before making changes to the NYS Residential Code.

The 2021 International Residential Code, Appendix AF "Radon Control Methods," adds a requirement for testing and mitigation if the radon levels exceed 4 picocuries per liter (https://codes.iccsafe.org/content/IRC2021P1/appendix-af-radon-control-methods). Presumably, the 2024 IRC contains similar language. Adopting this version of the International Residential Code would make homes built with radon resistant features the only homes in NYS that are required to be tested and mitigated.

Adoption of Appendix AF to the 2024 International Residential Code for those areas defined as Zone 1 based on the NYS Department of Health's radon database would require minor language changes to the Appendix to define these areas. The US Environmental Protection Agency's radon maps currently included in the appendix are based on old data and in the process of being updated. Proposed revisions to the 2024 Appendix AF recommend complete removal of the US Environmental Protection Agency's zone map, making the Appendix applicable in all areas of the state. The NYS Department of Health's radon database has more current testing information. Currently, 2 NYS towns (Lima and Caledonia in Livingston County) and 11 other states (https://www.eli.org/buildings/radon-control-new-home-construction-0) require that new homes be built radon resistant.

Appendix F/AF describes passive radon mitigation systems that are installed when the home is being built. These systems are also referred to as "Radon-Resistant New Construction" or RRNC techniques. The systems consist of a layer of gravel and polyethylene sheeting below the basement slab, polyvinyl chloride (PVC) piping venting the sub slab area out above the roof, and an electric junction box in the attic so that a fan may be installed to create an active mitigation system if necessary. The cost to a builder of including radon-resistant features in a new home during construction can vary widely. Many builders routinely include these features in some of their homes. The cost to the builder of including these features is typically less than the cost to mitigate the home after construction. Retrofitting an existing home typically costs between $778 and $1,223, but the cost can reach as much as $3,000 for a large home or property with multiple foundations, according to HomeAdvisor

The NYS Radon Task Force recommends that Appendix AF of the 2024 International Residential Code be considered for adoption into the NYS Residential Code by the State Fire Prevention and Building Code Council during the next update to the Uniform Fire Prevention and Building Code.

4. Radon testing and mitigation in schools

Background

Children breathe deeper, faster, and proportionately more air than adults. A case study (https://www.atsdr.cdc.gov/csem/radon/radon.pdf) by the Agency for Toxic Substances and Disease Registry concluded that due to lung shape and size differences, children have higher estimated radiation doses than adults. Their lungs are developing faster, making them more sensitive to indoor air quality. Children are among the most sensitive to radon gas.

Children and adolescents grow quickly, and their cells are more sensitive to radiation. Since effects of radiation take years to develop, individuals exposed to elevated levels of radon in their youth are more likely to develop radon-related illnesses later in life. Schools are often more crowded than other indoor spaces – four times the population density of a typical office means less fresh air available. School staff could have long-term exposure.

A nationwide survey of radon levels in schools estimates that nearly one in five has at least one schoolroom with a short-term radon level above the action level of 4 picocuries per liter - the level at which the US Environmental Protection Agency recommends that schools take action to reduce the level. The US Environmental Protection Agency estimates that more than 70,000 schoolrooms in use today have high short-term radon levels. The only way to know whether an elevated level of radon is present in any room in a school is to test. To date, approximately 20% of the schools nationwide have done some testing (https://www.epa.gov/radon/radon-school).

Currently, seventeen states have radon-related policies for schools. Eight require testing schools for radon and three require mitigation of schools with radon concentrations greater than or equal to 4 picocuries per liter. For more information see the report: *Radon in Schools: Overview of State Laws* from the Environmental Law Institute https://www.eli.org/sites/default/files/files-p.df/RADON%20TSEH%207.pdf (updated 2021)

Requirement	CO	CT	DC	FL	IL	IN	IA	ME	MN	NE	NJ	NY	OR	RI	VT	VA	WV
Test for Radon	X	X*	X	X	~	~	~	~				~	X	X	X	X	#
• Funding if Available								X	X								
• Per a Standard	X							X						X	X		
• Results Are Public	X	X	X		~		X	X					X	X		X	X
• Report to State				X	X		X	X	X				X			X	X
Mitigate > 4 picocuries per liter			X		~									X			X
• Funding if Available							X		X								
RRNC- Radon Resistant New Construction - New School	X	1,2			~			X		X	1	~	1	1,2			

X required
* post-2003 only
~ recommended
1 or 1,2 radon zone(s)
state performs test

Current NYS school safety regulations (8 NYCRR 155.5(m) https://www.p12.nysed.gov/facplan/Laws_Regs/8NYCRR155.htm) require that schools take responsibility to be aware of the geological potential for high levels of radon and to test and mitigate as appropriate. It further states that the information on geologic potential for radon available from the NYS Department of Health's Radon Measurement Database. This language is ambiguous as it requires school districts to test as appropriate based a geologic potential for high radon but does not define what is meant by any of those terms.

The State Education Department Manual of Planning Standards (https://www.p12.nysed.gov/facplan/documents/mps1998.pdf) provides some guidance related

radon considerations for renovations and new buildings. It states that "School buildings, when renovated or designed, shall use design principles and construction materials which further the goals of…radon-proofing…" Radon-proofing is not defined.

New York State Education Law and regulations require a building condition survey for all occupied school buildings to be conducted at least every five years (https://www.p12.nysed.gov/facplan/BldgCondSurv.htm). A State Aid formula reimburses districts for part of the cost of this survey. Radon is addressed under question 128 of this survey (https://p1232.nysed.gov/facplan/documents/2020BuildingConditionSurveyInstrument.pdf).

There are two federal programs: The US Department of Education Green Ribbon Schools Program and the US Environmental Protection Agency's Indoor Air Quality Tools for Schools Program that provide guidance and recommendations for improving the school environment. Both programs include radon. At the state level, the NYS Department of Health has a School Environmental Health Program funded by a grant through the US Environmental Protection Agency.

The US Department of Education Green Ribbon Schools program recognizes schools taking a comprehensive approach to greening their school. A comprehensive approach incorporates environmental learning with improving environmental and health impacts.

Schools can apply to the New York State Green Ribbon Schools Program and be selected to apply to the federal program based on documentation of the applicant's exemplary achievement in all three US Department of Education Green Ribbon Schools Pillars:

Pillar I: Reduce environmental impact and costs, including waste, water, energy use and alternative transportation.

Pillar II: Improve the health and wellness of students and staff, covering environmental health and nutrition and fitness; and (Element 2A: integrated school environmental health program).

Pillar III: Provide effective environmental and sustainability education, requiring robust environmental education that engages science, technology, engineering, and math (STEM), civic skills and green career pathways.

The US Environmental Protection Agency promotes improving air quality for schools through its Indoor Air Quality Tools for Schools Program. The program includes an Indoor Air Quality Tools for Schools Action Kit (https://www.epa.gov/iaq-schools/indoor-air-quality-tools-schools-action-kit) which shows schools how to carry out a practical plan to improve indoor air problems at little or no cost using straightforward activities and in-house staff. The action kit provides best practices, industry guidelines, sample policies, and a sample Indoor Air Quality Management Plan. The US Environmental Protection Agency's Indoor Air Quality Tools for Schools guidance includes a factsheet on managing radon in schools (https://www.epa.gov/sites/default/files/2014-11/documents/managing_radon.pdf) which recommends that all schools be tested for radon.

The New York State School Environmental Health Program (https://www.health.ny.gov/environmental/indoors/healthy_schools/) is designed to help all school employees, volunteers, students, parents, and guardians contribute to improving their school's environmental health. The program has been developed by a multi-disciplinary steering committee to help schools improve their environmental health through voluntary guidelines. Schools that participate in this program gain the opportunity and knowledge to create schools with better environmental health. The program provides information for all school occupants on policies, best practices, tools, knowledge, and resources in nine main areas: Indoor Air Quality; Energy and Resource Conservation; Integrated Pest Management; Mold and Moisture; Chemical and Environmental Hazards; Cleaning and Maintenance; Transportation; Construction/Renovation; and Water Quality. Participation is voluntary.

Many NYS school districts have taken the initiative to perform radon testing. In the early 1990's there was an extensive outreach campaign, and schools in 34 counties were tested. The NYS Radon Program also did outreach campaigns in 2001 and 2013. Another outreach campaign is currently underway.

In some cases, the districts hire outside consultants; others rely on their Environmental Health and Safety personnel to design and perform the testing. The NYS Radon Program provides radon test kits at discounted rates subsidized through the US Environmental Protection Agency's State Indoor Radon Grant. NYS Department of Health staff have provided guidance, pointed the schools to current methods for sampling and quality control, and reviewed testing plans to ensure consistency with the American Association of Radon Scientists and Technicians – American National Standards Institute standard for radon testing in schools.

Mitigation strategies in schools can vary from adjustments to the facility's heating, ventilation and air conditioning (HVAC) system to installation of a sub slab depressurization system. Costs for mitigation can vary widely based on the system installed. School districts may receive state support through Building Aid on radon mitigation projects. Under certain circumstances, costs incurred by schools for radon testing may also be funded through this aid category. Building Aid represents the State's main source of support to school districts for capital improvement projects.

The NYS Radon Task Force recommends that the language in 8 NYCRR 155.5(m) be revised to clarify what is meant by "be aware of the geological potential for high levels of radon and to test and mitigate as appropriate" specifically "geologic potential" and "high levels of radon" need to be defined. As any school building can have rooms with elevated radon levels, the Task Force further recommends that the NYS Education Department expand this regulation to include all school districts. In addition, the Task Force recommends that regulations and guidance reference current national standards for radon testing and mitigation in schools and large buildings.

5. Radon testing in daycare facilities.

Background

The NYS Office of Children and Family Services regulates daycare facilities under 18 NYCRR 413-418. In order to operate a daycare facility, a license application must be submitted. An environmental hazards assessment is required as part of the license application process.

Regulations require certification that the building, its property and premises, and the surrounding neighborhood and environment are free from environmental hazards. Such hazards include but are not limited to, dry cleaners, gas stations, nuclear laboratories or power plants, property designated as a federal superfund clean-up site, and any property with known contaminated ground or water supplies. Where the historical or current use of the building, its property and premises, or the surrounding neighborhood indicate that an environmental hazard may be present, inspection or testing must be completed by the appropriate local official or authority to determine if such hazard exists. Documentation of the inspection or testing must be appended to the environmental hazards assessment and include a statement from the appropriate local official or authority following this inspection and/or testing that the building, its property and premises, and the surrounding neighborhood meet applicable standards for sanitation and safety.

Radon is included as an environmental hazard that needs to be evaluated in towns considered high risk for elevated indoor radon based on the NYS Department of Health's radon database. Radon testing must be performed, and any identified problems must be resolved before registration/licensing is completed. Additional information can be found on the environmental hazards forms at: OCFS-LDSS-7040.dot (live.com), OCFS-LDSS-7041 Directions for Completing the Environmental Hazards Statement.doc (live.com), and OCFS-LDSS-7042 Environmental Hazard Information Form Parts I and II.doc (live.com)

Just as every building in the identified high-risk towns may not have elevated indoor radon, buildings in towns that are not identified high-risk can still have elevated radon levels. There are about 150 towns in NYS that are considered low risk that still have more than 10% of homes test high, including several with homes testing at greater than 100 picocuries per liter (See https://www.health.data.ny.gov/Health/Radon-Test-Results-By-Town-Beginning-1987/hbu9-xsrx/about_data and examples in the table below). A town is considered low risk if the average radon level is less than 4 picocuries per liter and the geometric mean is less than 2 picocuries per liter. Two adjacent buildings can also have very different radon levels as indoor radon concentration is determined by underlying geology and the properties of the house. The only way to tell if a building has elevated radon levels is to test.

Examples of Towns Where the Average Radon Level is Less than 4 Picocuries per Liter but the Number of Houses Greater than 4 Picocuries per Liter is Large										
		Test Location	Homes Screened	Radon Screening Concentration (picocuries per liter)				Total # of Homes		
County	Town/Village/City			Avg	GEO Mean	GEO Std Dev	Max	<4 picocuries per liter	≥4 & <20 picocuries per liter	>20 picocuries per liter
ALBANY	COLONIE	Basement	554	3.56	1.83	3.05	57.9	434	109	11
CAYUGA	AUBURN	1st Floor	597	2.07	1.14	2.95	91.2	524	72	1
DUTCHESS	POUGHKEEPSIE	1st Floor	316	2.58	1.54	3.02	20.7	261	54	1
ERIE	LANCASTER	Basement	214	2.89	1.31	2.76	155.1	192	18	4
ERIE	AMHERST	Basement	960	2.58	1.19	2.94	115.6	855	83	22
MONROE	PITTSFORD	Basement	224	2.36	1.7	2.23	21.6	197	26	1
ONONDAGA	SYRACUSE	1st Floor	749	3.7	1.4	4.08	130.6	575	156	18
ROCKLAND	RAMAPO	Basement	797	2.46	1.61	2.58	26.6	672	122	3
ROCKLAND	CLARKSTOWN	Basement	1,171	2.09	1.33	2.47	75.4	1,060	103	8
SCHENECTADY	NISKAYUNA	Basement	250	2.96	1.89	2.62	25	190	59	1

Since any home can have a high radon level, it makes sense to expand the radon testing requirement under the NYS Office of Children and Family Services Environmental Hazards Assessment to all areas of the state, not just areas considered high-risk. Radon testing is inexpensive. Test kits cost around $25 if purchased from a hardware store or directly from a radon laboratory. The NYS Radon Program offers half price test kits to daycare providers.

Nine other states require radon testing in daycare facilities, though the specifics of the requirements vary. The Environmental Law Institute issued a recent report "Radon in Child Care: Review of State Policies" (https://www.eli.org/sites/default/files/eli-pubs/radon-child-care-report.pdf) which summarizes the daycare radon policies across the country.

The NYS Radon Task Force recommends that the requirement for radon testing of daycare facilities as part of an environmental hazards assessment be expanded to include daycare facilities in all areas of NYS.

6. Radon testing and mitigation as part of all real estate transactions

Background

Though not required, radon testing is often done as part of a home inspection during real estate transactions. New York Real Property Law § 462 (https://codes.findlaw.com/ny/real-property-law/rpp-sect-462.html) requires that all sellers of residential real property complete and provide to the buyer a property condition disclosure statement. This statement requires disclosure of the presence of environmental hazards such as the presence of lead and asbestos, and if any radon testing has been performed on the property. A copy of any radon testing reports must be provided as well. In addition, the standard real estate contract lists optional inspections that allow cancellation of the contract contingent on the findings. One of these optional inspections is a radon test. The contract allows the buyer to cancel if the radon levels are above 4 picocuries per liter.

Because of this, real estate transactions are the leading avenue for making the public aware of radon. However, many real estate agents are not well versed in radon risk and therefore are unwilling or unable to provide advice to their clients.

The Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as Title X, was enacted to protect families from exposure to lead from paint, dust, and soil. Section 1018 of this law directed the US Department of Housing and Urban Development and the US Environmental Protection Agency to require the disclosure of known information on lead-based paint and lead-based paint hazards before the sale or lease of most housing built before 1978 (https://www.hud.gov/program_offices/healthy_homes/enforcement/disclosure). This law requires that before ratification of a contract for housing sale or lease, sellers and landlords must:

- Provide a US Environmental Protection Agency approved information pamphlet on identifying and controlling lead-based paint hazards.
- Disclose any known information concerning lead-based paint or lead-based paint hazards.

- Provide any records and reports on lead-based paint and/or lead-based paint hazards
- Include an attachment to the contract or lease (or language inserted in the lease itself) which includes a Lead Warning Statement and confirms that the seller or landlord has complied with all notification requirements. Sellers or landlords, and agents, as well as homebuyers or tenants, must sign and date the attachment.
- Provide homebuyers a 10-day period to conduct a paint inspection or risk assessment for lead-based paint or lead-based paint hazards.

A similar law providing for disclosure of the presence of radon with the additional requirement for providing a pamphlet on the risks of radon and a signature of the buyer acknowledging receipt of the information would improve awareness of radon risk for both homebuyers and sellers. As previously stated, the current NYS Real Estate Disclosure Law and standard contract do address radon testing, but without the additional information on radon risk, they buyer is not able to make an informed decision on radon testing.

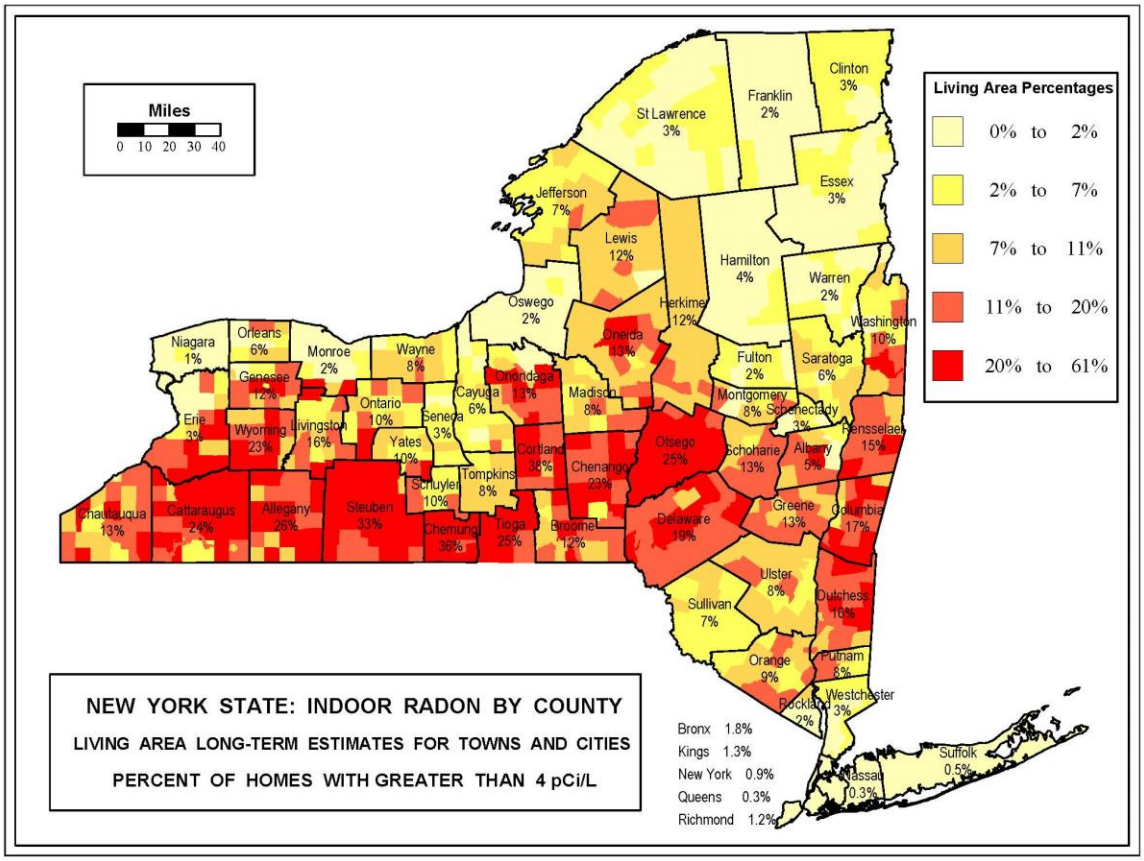
Although Subsection 444-b(4) of Article 12-B of the NYS Real Property Law states that a home inspection shall not include an inspection for radon or pests, many home inspectors do perform radon testing without proper training on deployment and interpretation of the test. 19 NYCRR 197-3.2 specifically states that courses for radon will not be accepted for continuing education credit (https://dos.ny.gov/system/files/documents/2022/04/homeinspectionprofessional.pdf), so there is no incentive for home inspectors to become trained in radon testing procedures. Improperly performed radon tests can lead to erroneously low (or high) readings which do not allow homebuyers to make the proper decisions on radon mitigation or proceeding with the purchase of the home.

The NYS Radon Task Force recommends that NYS adopt a radon disclosure law similar to the lead paint disclosure law which requires the distribution of a pamphlet or other informational materials and a signature from the buyer acknowledging receipt of this information. In addition, the Task Force recommends that the NYS Real Property Law and associated regulations be amended to allow radon testing as part of a home inspection and allow training on radon testing to fulfill continuing education requirements for home inspectors.

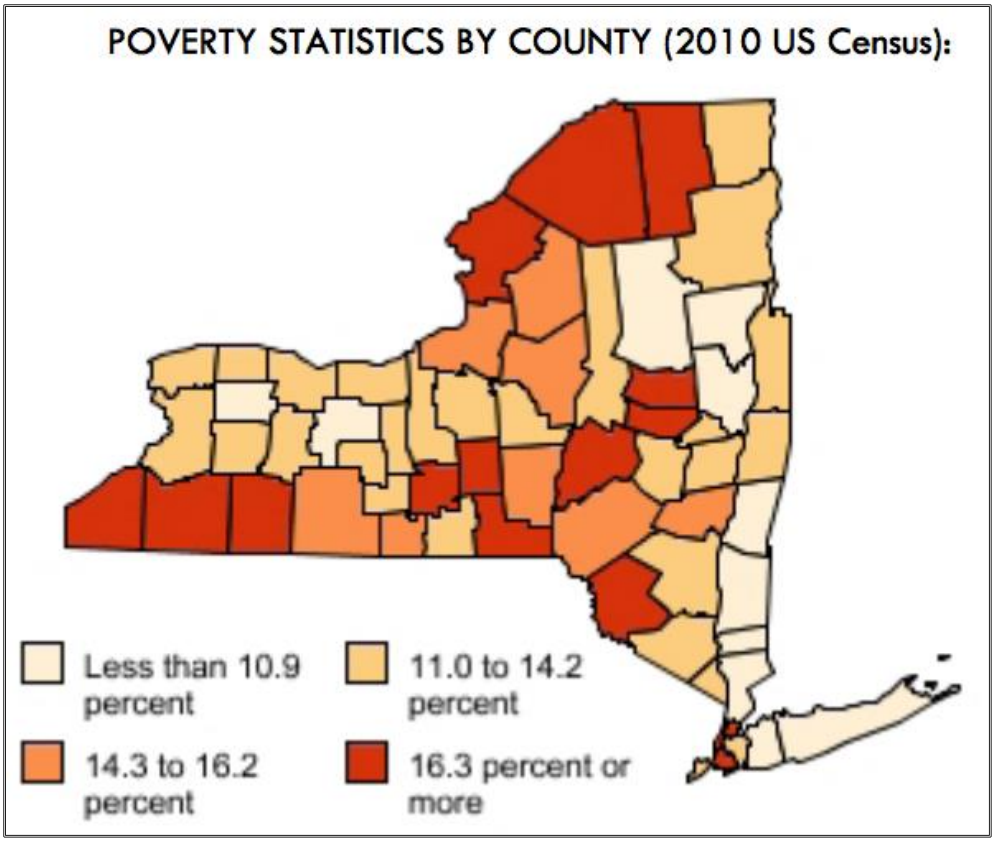
7. Financial assistance/incentives for persons to test and mitigate their homes for radon

Background

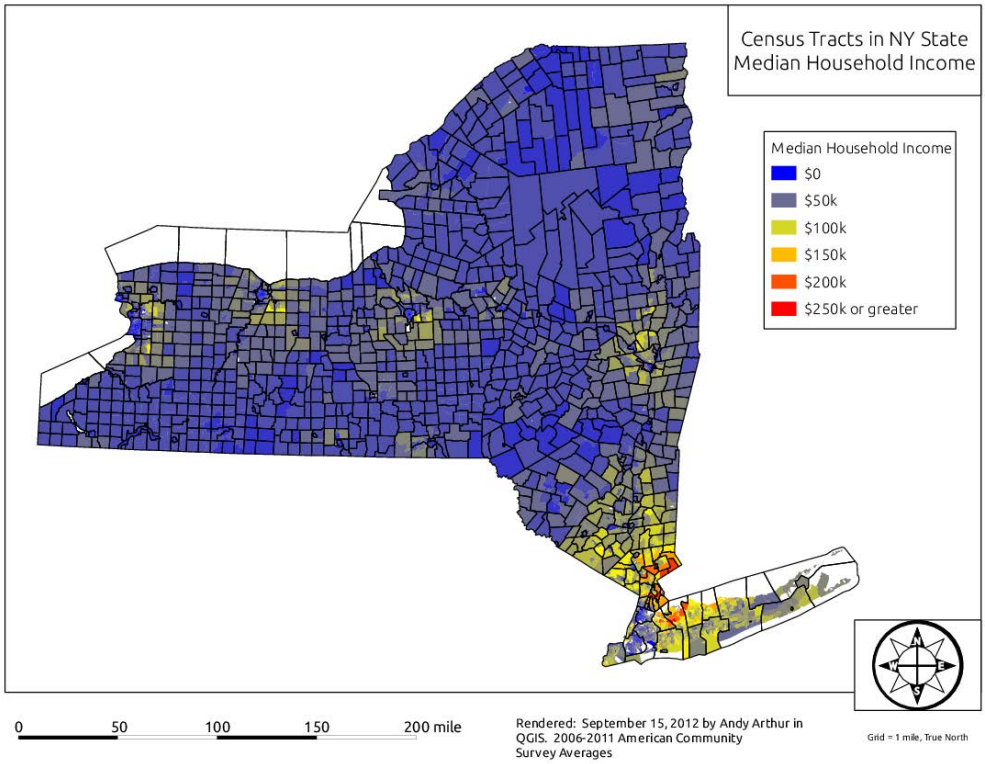
Radon testing is inexpensive, especially if someone performs the test themselves with a short-term test kit, but radon mitigation can be a significant expense, especially for lower income and elderly homeowners. There are many programs that even offer free or lower cost radon test kits to eligible individuals, but financial assistance for radon mitigation is virtually non-existent. If you compare maps of elevated radon levels and poverty areas in NYS, you will see that the areas overlap extensively.



https://www.wadsworth.org/radon



https://grist.org/wp-content/uploads/2012/06/screen-shot-2012-06-13-at-9-38-14-am.png?resize=150



There are some financial assistance programs for radon mitigation available through the US Department of Agriculture and the US Department of Housing and Urban Development. The US Department of Agriculture Rural Development Housing Program has three options for financing radon mitigations:

- The Single-Family Housing Repair Loans and Grants (Section 504 Program) provides loans to very low-income homeowners to repair, improve or modernize their homes and grants to elderly very low-income homeowners to remove health and safety hazards. The maximum loan is $20,000 and can be repaid over 20 years with a fixed interest rate of 1 percent. A real estate mortgage is required for loans of $7,500 or more. For grant consideration, the applicant must be 62 or older and not able to repay a repair loan. Grants have a lifetime limit of $7,500 but can be combined with a loan for up to $27,500 in assistance. Grants must be repaid if the property is sold in less than three years. (https://www.rd.usda.gov/programs-services/single-family-housing-repair-loans-grants).

- Direct and Guaranteed Single Family Housing Loans (Section 502 Program) provides low- and moderate-income households the opportunity to purchase or build modest, decent, safe, and sanitary dwellings in eligible rural areas. These two loan programs provide home purchase financing but can also support qualifying housing rehabilitation. Household income determines if applicants qualify for a loan directly from the US Department of Agriculture Rural Development Housing Program or from a participating financial institution.

    - Section 502 Direct Loans are available to low-income households as defined as 80 percent of the US Department of Housing and Urban Development median income limit. No down payment is required, and the US Department of Agriculture can finance up to 100 percent of the appraised value. The standard term for a Section 502 Direct Loan is 33 years. Loans are made at a fixed rate established by the Agency; payment subsidies are available to qualifying borrowers to reduce loan payments. Private mortgage insurance is not required. (https://www.rd.usda.gov/programs-services/single-family-housing-direct-home-loans).

    - Guaranteed Rural Housing Loans assist approved lenders in providing low- and moderate-income households the opportunity to purchase or build modest homes in rural areas. The program provides a 90 percent loan note guarantee to approved lenders in order to reduce the risk of extending 100 percent loan to value financing to eligible homebuyers. These loans are made at a competitive fixed rate of interest and are repaid over 30 years. Private mortgage insurance is not required, but a guaranteed fee is required at closing, which can be financed above the appraised value. (https://www.rd.usda.gov/programs-services/single-family-housing-guaranteed-loan-program).

- Housing Preservation Grants (Section 533 Program) provide grants to sponsoring organizations for the repair or rehabilitation of housing owned or occupied by low and very low-income rural citizens. Eligible applicants include most state and local government agencies, nonprofit organizations, and federally recognized tribes. The grantee must have the necessary background and experience with proven ability to perform the responsibility of repair rehabilitation of low-income housing. Funds can be used by the grantee to provide grants or low interest loans to income qualifying rural homeowners or to rental property owners if they agree to make units available to low-income families. Areas to be served have a population limit of 20,000. (https://www.rd.usda.gov/programs-services/housing-preservation-grants)

The US Department of Housing and Urban Development's Section 203(k) Mortgage Insurance Program can also be used for radon mitigation. This is the US Department of Housing and Urban Development's primary tool for rehabilitating and improving single family homes. The program allows home buyers to finance the purchase and repair or improvement of a home using a single mortgage loan. To qualify, the total cost of the eligible repairs or improvements, including fixes to reduce radon levels must be at least $5,000. As most radon mitigation systems cost less than $2,000, additional repairs would need to be financed to reach the minimum loan value (https://www.hud.gov/program_offices/housing/sfh/203k/203k--df).

In December 2009, the Alliance for Healthy Homes published a Guide for Financing Radon Mitigation to Reduce Exposure in Existing Housing (https://www.radonillinois.com/wp-content/uploads/2012/02/Radon-Financing-Guide.pdf). This document describes several grant and low interest loan programs that can be leveraged to provide financial assistance for radon mitigation.

Many of the programs discussed in the guide rely on housing agencies using funds from block grants such as the Community Development Block Grant, the HOME Investment Partnerships Program, and the Neighborhood Stabilization Program. These grants deliver funds to communities to run programs that meet locally defined needs for housing repairs and upgrades to address health and safety. Agencies applying for these grants can include radon mitigation as one of the problems to be addressed, though most allocate funding to other issues.

Another option is to subsidize the cost of radon mitigation by using pre-tax dollars from a Health Savings Account, Flexible Spending Account, or Health Reimbursement Arrangement. Under §213(d)(1)(A), medical care includes amounts paid for the diagnosis, cure, mitigation, treatment, or prevention of disease, or for the purpose of affecting any structure or function of the body. A homeowner would need to provide a letter of medical necessity and documentation of a high radon test. Many doctors have used the Surgeon General's warning to justify medical necessity. Not all Health Savings Account, Flexible Spending Account, and Health Reimbursement Arrangement accounts include radon mitigation as an allowable expense.

Several states have programs to fund or subsidize radon testing and mitigation. Some examples are:

- In July 2021, Maine established the Maine Gold Standard for Radon Testing and Mitigation Initiative (https://legislature.maine.gov/legis/statutes/22/title22sec785.html) to reward, recognize, promote and assist, with a gold standard designation, landlords, homeowners and home builders who participate in radon testing and mitigation activities. Among other things, this law provides the Maine Department of Health and Human Services will pay all costs of radon testing during a home sale and $600 toward mitigation costs. This program was modeled after the now defunct Minnesota Gold Standard Radon Resistant Builder Program (https://www.eli.org/buildings/profiles-innovative-state-programs-minnesota-gold-standard-radon-program). A funding mechanism for this program has not yet been established.

- Effective January 2017, Colorado has established a radon mitigation assistance program to provide financial assistance to low-income individuals for radon mitigation in their homes. The program is managed by the state board of health. Money in the hazardous substance response fund, specifically tire recycling fees, is used to finance the radon education and awareness program and the radon mitigation assistance program

The NYS Radon Task Force recommends that federal agencies, state agencies, local non-profits, and health insurance companies consider programs to encourage testing for radon and/or provide funding to subsidize the cost of installing a radon mitigation system. Options to conder include:

- ***Radon testing and mitigation is included in many green building programs (https://support.usgbc.org/hc/en-us/articles/4404406912403-What-is-LEED-certification). In addition to decreasing indoor radon levels, mitigation systems decrease soil vapor intrusion and moisture in basements. Reducing all three of these contaminants improves the overall healthiness of the home. Tax credits are available for some green building initiatives (https://greenhomeinstitute.org/green-building-remodeling-tax-credits/). These could be expanded to include tax credits for radon mitigation.***
- ***Preventive medicine coverage in some health insurance plans could be expanded to include radon testing and mitigation. Many plans will provide partial reimbursement for gym memberships https://www.healthplanrate.com/news/what-health-insurance-pays-for-gym-membership) and federal law requires that smoking cessation be covered (https://www.lung.org/policy-advocacy/tobacco/cessation/tobacco-cessation-treatment-what-is-covered).***
- ***Encourage the US Department of Housing and Urban Development and NYS Homes and Community Renewal to provide grants and other funding for radon mitigation to local non-profit housing organizations.***
- ***Encourage local non-profit housing organizations to leverage existing grant programs to help finance radon mitigation.***

- ***Modify existing programs such as the US Department of Energy's Weatherization Program to allow for radon mitigation. The current program requires that the contractors provide homeowners with radon information, but the only mitigation technique that is approved is some limited sealing of cracks and other openings.***
- ***NYS should consider developing a funding mechanism for radon mitigation like what has been developed in other states (Colorado, Maine, Minnesota).***

8. Radon in drinking water

Background

Radon gas can also dissolve and accumulate in water from underground sources (called ground water) such as wells. When water that contains radon is used in the home for showering, washing dishes, and cooking, radon gas escapes from the water and goes into the air, though only about 1-2 percent of radon in the air comes from drinking water. Some radon will stay in the water and drinking water containing radon presents a risk of developing internal organ cancers, primarily stomach cancer. However, this risk is much smaller than the risk of developing lung cancer from radon released to air from tap water.

Based on a National Academy of Sciences report (https://nap.nationalacademies.org/read/6287/chapter/3), the US Environmental Protection Agency estimates that radon in drinking water causes about 168 cancer deaths per year: 89 percent from lung cancer caused by breathing radon released to the indoor air from water and 11 percent from stomach cancer caused by consuming water containing radon.

There is currently no federally enforced drinking water standard for radon. The US Environmental Protection Agency has proposed to regulate radon in drinking water from community water suppliers (water systems that serve 25 or more year-round residents). The US Environmental Protection Agency does not regulate private wells.

In 1999, the US Environmental Protection Agency proposed to require community water suppliers to provide water with radon levels no higher than 4,000 picocuries per liter, which contributes about 0.4 picocuries per liter of radon to the air in a home. This requirement assumes that the State is also taking action to reduce radon levels in indoor air by developing US Environmental Protection Agency approved, enhanced State radon in indoor air programs (called Multimedia Mitigation Programs). This is because most of the radon you breathe comes from soil under the house. This option gives States the flexibility to focus on the greatest problems, by encouraging the public to fix radon in indoor air problems and build homes that keep radon from entering.

Under the proposed regulation, for States that choose not to develop enhanced indoor air programs, community water systems in that State would be required to reduce radon levels in drinking water to 300 picocuries per liter. This amount of radon in water contributes about 0.03 picocuries per liter of radon to the air in your home. Even if a State does not develop an

enhanced indoor air program, water systems may choose to develop their own local indoor radon program and meet a radon standard for drinking water of 4,000 picocuries per liter.

EPA proposed this option, under the framework specified by the 1996 Amendments to the Safe Drinking Water Act (https://archive.epa.gov/water/archive/web/html/regulations.html), so that the overall risks from exposure to radon, both through air and water, are reduced. The proposed regulations have not been adopted.

If testing your private well shows that you have high levels of radon in your drinking water and you are concerned about it, there are some things you can do to improve the water. The most effective treatment you can apply is to remove radon from the water right before it enters your home. This is called point-of-entry treatment. There are two types of point-of-entry devices that remove radon from water:

- Granular activated carbon filters (which use activated carbon to remove the radon), and
- Aeration devices (which bubble air through the water and carry radon gas out into the atmosphere through an exhaust fan).

Granular activated carbon filters tend to cost less than aeration devices, however, radioactivity collects on the filter which may cause a handling hazard and require special disposal methods for the filter.

Several northeast states have set guidance values for radon in either public or privates water supplies.

- The Connecticut Department of Public Health has set an action level for radon in private wells of 5,000 picocuries per liter and recommends that water departments or utilities also keep the water at the tap below this action level https://portal.ct.gov/OCC/Water/Water/radon

- Massachusetts has set a guideline of 10,000 picocuries per liter. Exceedance of this guideline indicates that indoor air sampling for Radon-222 should be done. https://www.mass.gov/guides/drinking-water-standards-and-guidelines#-standards-

- The Vermont Health Department has set an advisory level for radon in water of 4,000 picocuries per liter. They recommend that if the result of the radon in water test is less than 4,000 picocuries per liter, you should test your water again in five years. If your radon in water result is at or above 4,000 picocuries per liter, consider treating your water. https://www.healthvermont.gov/environment/drinking-water/radon-drinking-water

- In New Hampshire, there is currently an "Advisory Level" of 2,000 picocuries per liter for radon in water, at which point mitigation for radon in water should be considered. https://www.dhhs.nh.gov/dphs/holu/documents/hom-radon.pdf#:~:text=Maximum%20Contaminant%20Levels%20%28MCLs%29%20for%20contaminants%20in%20drinking,radon%20in%20water%20please%20see%20DWGB%20Factsheet%203-12

- New Jersey has a proposed maximum contaminant level of 800 picocuries per liter. https://www.nj.gov/dep/wms/download/Gardner_Radon%20in%20Water%20WMC%20012418.pdf

The NYS Radon Task Force recommends that the NYS Department of Health consider developing a guidance value for radon in drinking water. The guidance value should be accompanied by a fact sheet on radon in both public and private water supplies.

9. Radon testing and mitigation in tenant-occupied buildings

Background

Currently New York State has no requirements for landlords to test for radon, share radon results with tenants, or mitigate high radon levels. Over one-third of all housing units in this country are rental units. Most of these are either single-family houses or apartments located below the third floor of a building. Rental housing laws are particularly important to reducing indoor exposure to air pollutants for vulnerable populations. Recent census data show that there are more renter-occupied households than owner-occupied households with incomes below $50,000. (https://data.census.gov).

The US Environmental Protection Agency recommends testing all homes below the third floor. Since most indoor radon comes from naturally-occurring radon in the soil, high indoor levels are more likely to exist below the third floor. Fixing a radon problem usually involves repairs to the building. Therefore, it is generally the building owner - and not the tenant - who is authorized to have this work done.

New York Real Property Law Sec. 235-B provides for a warranty of habitability (https://newyork.public.law/laws/n.y._real_property_law_section_235-b) and states that "…the premises … are fit for human habitation and for the uses reasonably intended by the parties and that the occupants of such premises shall not be subjected to any conditions which would be dangerous, hazardous or detrimental to their life, health or safety. A habitable property is one that is free from infestation, has adequate heating, water, and electricity, and is structurally sound. must be free from conditions dangerous, hazardous, or detrimental to tenant's life, health, or safety. As radon is a known carcinogen, living in an apartment with elevated radon levels can be considered hazardous.

As with radon, landlords in New York State are not required to test paint for lead, nor are they required to allow a prospective tenant to test paint for lead before renting. However, they are required to disclose any known lead paint hazards to prospective tenants. This regulation also requires that prospective tenants be given a US Environmental Protection Agency pamphlet about residential lead poisoning hazards. It does not require landlords to undertake any new investigations or assessments to find out whether their rental dwellings contain lead paint, or any other lead. (https://www.findlaw.com/realestate/landlord-tenant-law/tenant-lead-law-rental-property-lead-disclosures-faq.html).

US Department of Housing and Urban Development regulations implementing the National Environmental Policy Act (NEPA) are contained in 24 CFR Part 50, "Protection and Enhancement of Environmental Quality." Section 50.3(i)(1) requires that property proposed for US Department of Housing and Urban Development programs be free of radioactive substances that could affect the health and safety of occupants (https://www.hud.gov/sites/documents/13-03HSGN.PDF). All US Department of Housing and Urban Development funded properties must be tested for radon and levels greater than 4 picocuries per liter must be mitigated.

Vapor intrusion systems installed to remove subsurface volatile organic compounds from the soil are installed in basements of buildings. These mitigation systems are essentially the same as the sub-slab depressurization systems used to remove radon. Currently, NYS Environmental Conservation Law ECL 27-2405 (https://www.dec.ny.gov/regulations/55739.html) requires property owners or owners' agents to notify all of their tenants and occupants of any test results related to indoor air contamination associated with soil vapor intrusion (https://www.dec.ny.gov/docs/remediation_hudson_pdf/tennotesvi.pdf). The law applies to both residential and non-residential properties. As radon in a building can be considered soil vapor intrusion, it would seem that this law could be interpreted to include radon.

Several states have developed laws to specifically address radon in rental properties:

Maine: Legislation requires that landlords have their properties tested for radon by March 1, 2014, and test every ten years thereafter if requested by a tenant. The law allows both tenants and landlords to terminate a lease or tenancy at will if testing reveals radon levels at or above 4.0 picocuries per liter. Allowing a landlord to terminate a tenancy due to high radon levels in the property can potentially undermine the goal of reducing exposure to radon gas. (http://www.mainelegislature.org/legis/statutes/14/title14sec6030-D.html)

Illinois: The Illinois Radon Awareness Act does not require testing but establishes a landlord's duty to disclose known elevated radon levels in certain circumstances. Landlords must notify current and prospective tenants of a dwelling unit about any radon hazard revealed by the landlord's testing of that unit. The law also requires landlords to disclose to prospective tenants of a residential unit any radon hazard revealed by the current tenants' testing of that unit unless the landlord's subsequent testing demonstrates that a hazard does not exist. (https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=2913&ChapterID=37)

Florida: Florida has enacted legislation addressing radon hazards in rental properties as part of the Florida Radiation Protection Act. The law requires that a radon notification be provided on

"at least one document, form, or application executed at the time of, or prior to … execution of a rental agreement for any building" (http://www.leg.state.fl.us/statuTes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0400-0499/0404/Sections/0404.056.html).

Municipal codes may also address radon in rental housing. An Iowa City, Iowa ordinance (https://www.icgov.org/radontesting) requires single-family and duplex rental homes to be tested for radon and retested every eight years. If tests are 4.0 picocuries per liter or higher, a mitigation system must be installed. South Brunswick Township, New Jersey, has adopted an ordinance (Sec 22-346 of the Residential Rental Housing Code (https://library.municode.com/nj/south_brunswick_township/codes/code_of_ordinances?nodeId=CH22BUBURE_ARTVIIIREREHOCO_S22-346IN) requiring a landlord to provide a completed radon test showing concentrations below 4.0 picocuries per liter prior to renting a dwelling unit.

The NYS Radon Task Force recommends the following:

- ***Develop a law like the Residential Lead-Based Paint Hazard Reduction Act, wherein landlords would need to disclose elevated radon levels prior to renting.***
- ***Consider expanding the interpretation of the soil vapor intrusion disclosure to include radon.***

ATTACHMENTS

1. Photographs of improperly installed mitigation systems
2. NYS Department of Health Environmental Laboratory Approval Program radon lab inspection checklists
3. Proposed language for radon tester/mitigator licensing legislation

Attachment 1 – Photographs of Improperly Installed Radon Mitigation Systems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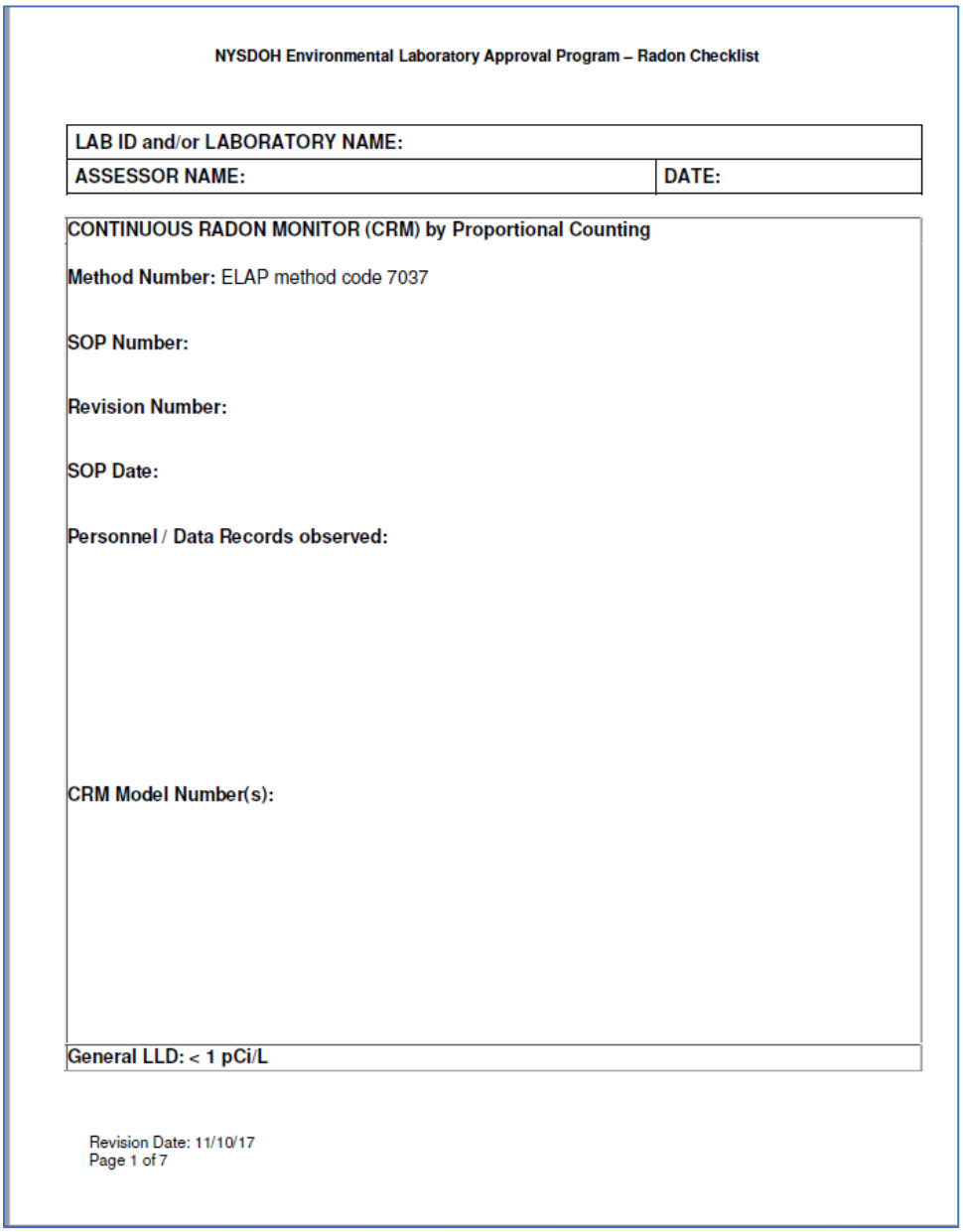
Attachment 2 – NYS Department of Health Environmental Laboratory Approval Program Radon Tester Inspection Checklists



NYSDOH Environmental Laboratory Approval Program – Radon Checklist

LAB ID and/or LABORATORY NAME:	
ASSESSOR NAME:	DATE:

CONTINUOUS RADON MONITOR (CRM) by Proportional Counting

Method Number: ELAP method code 7037

SOP Number:

Revision Number:

SOP Date:

Personnel / Data Records observed:

CRM Model Number(s):

General LLD: < 1 pCi/L

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NYSDOH Environmental Laboratory Approval Program – Radon Checklist

Question	Y	N	NA	Codes	Comments
RADON IN AIR					
1. Are both of the following EPA publications available at the lab:					
a. Protocols for Radon and Radon Decay Product Measurements in Homes? (EPA 402-R92-003)				N002	
b. Indoor Radon and Radon Decay Product Measurement Device Protocols? (EPA 402-R92-004)				N003	
2. Does the facility monitor Radon levels in air for a minimum of 48 continuous hours, process the collective data and interpret the result for the client (rather than merely distributing devices)?				N004	
3. Is a written standard operating procedure (SOP) available? (Duplication of the protocols will not suffice.)				N005	
a. Does the analyst follow the manufacturer's instructions, the US EPA protocols and the lab's SOP?				N072	
4. Is a written quality assurance project plan (QAPP) appropriate to each device available?				N006	
5. Does the data collection log include:					
a. Date and time of deployment?				N007	
b. Date and time of removal?				N008	
c. Condition of the devices?				N009	
d. Attainment of closed building conditions?				N010	
1. Delayed start, if implemented				N010A	
e. Exact location of device (i.e., building, room and sampling position) within the property being monitored?				N011	
f. Serial number, model number, and manufacturer of the detector?				N012	
g. Unique identifier of client and client's address (if different from testing location)?				N013	
h. Condition of crawl space vents?				N014	
i. Performance of a "Routine Instrument Check" (to include, but not limited to, zeroing the integrator, ensuring correct date and time indications, and fully charged battery)?				N253	
6. Are monitoring devices deployed and retrieved by trained employees of the radon laboratory?				N015	
7. When monitoring devices are set out and picked up by different				N016	

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NYSDOH Environmental Laboratory Approval Program – Radon Checklist

Question	Y	N	NA	Codes	Comments
persons, is this noted in the record?					
8. Is a qualifying statement used if the lab does not control the monitoring process (i.e., placed and/or retrieved by persons other than trained lab personnel)?				N017	
9. Are all devices deployed for 48 continuous hours if the measurement is used for remedial action or to determine the need for further measurements?				N018	
a. In cases where closed conditions have not been met, is there a 12-hour delayed start or extended monitoring period of at least 60 hours after closed conditions have been implemented?				N021	
10. Is the technical director of the laboratory aware of the device's Lower Limit of Detection (LLD), and has the background level been determined?				N019	
FIELD DATA					
1. Is the field data record (instrument field sheet) maintained?				N166	
QUALITY CONTROL					
1. Is the device an US EPA approved unit?				N251	Record CRM Model number.
2. Is the device capable of detecting at least 1 pCi/L?				N252	
3. Have all elements of the QC protocol been addressed in the QA Plan? a) background reading b) accuracy relative to a known reference standard via annual calibration c) precision of duplicates d) cross-checks				N171	
SYSTEM CALIBRATION and CROSS CHECKS					
1. Has either the manufacturer or the user (through an approved calibration service provider) calibrated the complete system in a radon chamber before being put into service and after any repairs or modifications?				N177	
2. Has the calibration been performed at least annually?				N178	

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NYSDOH Environmental Laboratory Approval Program – Radon Checklist

Question	Y	N	NA	Codes	Comments
3. Is a record of annual calibrations available?				N179	
a. Does the calibration account for instrument adjustments, background measurements, and use of traceable standards?				N179A	
4. Is the detector cross checked semi-annually against another recently calibrated instrument?				N180	
a. Is a record of the semi-annual cross check available?				N180A	
5. Do all detectors have individual calibration (correction) factors?				N182	
a. Are calibration (correction) factors applied correctly to each radon monitoring job?				N182A	
BACKGROUND MEASUREMENTS					
1. Is the background count measured in a low radon environment every 20th 48-hour measurement?				N185	
2. Is the background measured below 2 pCi/L?				N184	
DUPLICATE MEASUREMENTS					
1. If two or more detectors are available, are duplicate measurements taken?				N187	
a. Is the side-by-side measurement performed at a frequency of one (1) in ten (10) analyses?				N181	
b. Is the side-by-side measurement available for review?				N181A	
2. Are duplicate measurements made in at least 10% of the total number of measurement locations, or 50 each month, whichever is smaller?				N188	
a. If field duplicates are taken, are the field locations selected for duplicate measurements distributed systematically throughout the entire population of samples?				N193	
3. Is the precision of the duplicate data from radon levels measured at 4 pCi/L or above within 10% Relative Standard Deviation (RSD: for a long-term series of duplicate measurements), or 14% Relative Percent Difference (RPD: for a single pair of duplicates)?				N189	

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NYSDOH Environmental Laboratory Approval Program – Radon Checklist

Question	Y	N	NA	Codes	Comments
4. Are the data from duplicates available (e.g., control charts)?				N190	
5. Are the acceptance limits for duplicates determined?				N191	
RECORD KEEPING					
1. Are the following record(s) kept for 5 years by the measurement organization:					
a. A copy of the final report including measurement results and the statement outlining any recommendations concerning retesting or mitigation provided to the building occupant or agent?				N237	
b. The address of the building monitored including zip code?				N238	
c. The exact locations of all deployed measurement devices? (Examples: room sketches, detailed written description)				N239	
d. Exact start and stop dates and times of the measurement period required for analysis?				N240	
e. A description of the device used including the device identification number and serial number, if applicable?				N241	
f. A description of the condition of any permanent vents?				N242	
g. The name of the service organization used for calibrations and the certificates of calibration?				N243	
h. The name of the individual who conducted the test along with their associated training records?				N244	
i. A description of any variations from or uncertainties about standard measurement procedures, closed building conditions, or other factors that may affect the measurement result?				N245	
j. A description of any non-interference controls and copies of signed non-interference agreements?				N246	
k. A record of any quality control measurements associated with the test?				N247	
l. The written authorization from the client enabling the lab to report results to a third party (if applicable)?				N254	
REPORTING					
1. Is the US EPA average reported to the client?				N260	First four (4) hours is omitted.

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Question	Y	N	NA	Codes	Comments
a. Are results reported to the client with % uncertainty?				N261	
2. Is the %Uncertainty determined by the following calculation: %Uncertainty = 100% X [1/(SQRT of counts)], where counts are determined as the [cph per 1pCI/L)] x (radon level measured expressed in pCi/L x EPA avg hrs of test)				N250	
a. Are reported results having uncertainties greater than 10% qualified?				N255	
b. Do reported values reflect the minimum reportable concentration? (example: For Sun Nuclear #1027 and #1028, this level would be 0.9 pCi/L for the EPA average of a 48 hour sample.)				N256	
3. Are field duplicate readings, if available, reported in an acceptable manner? (See EPA 402R92-003).				N259	

****The relative sensitivities per 1 pCi/L for commonly encountered Rn monitors are as follows:**
2.5 cph for Sun Nuclear Model #1027 and #1028
3.0 cph for Sun Nuclear Model #1030 (to be confirmed)
18 cph for Femtotech,
69 cph for Pylon CRMs

NOTES:
(The following paragraphs are from the updated **EPA 402R92-004** "Indoor Radon and Radon Decay Product Measurement Device Protocols")

- Users of continuous monitors must perform sufficient instrument **background measurements** to establish a reliable instrument background and to act as a check on instrument operation.

- The two previous editions of these protocols (U.S. EPA 1986, 1989a) used the value coefficient of variation (COV), defined as the standard deviation divided by the mean, as the expression used for **the goal (at 4 pCi/L or 0.02 WL) of 10 percent for precision.** The COV should decrease with increasing concentration. This edition explains that there is a variety of ways to calculate and express precision, including the COV and the relative percent difference, defined as the difference between two duplicates divided by their mean. It is important to monitor precision over the entire range of radon levels that are encountered routinely in the measurement program, and that a systematic and documented method for evaluating changes in precision be part of the standard operating procedures. **While a limited precision error is desirable (e.g., COV of < 10% at 4 pCi/L), it is most important to maintain the total error of any individual device (including both errors in precision and accuracy) to within ± 25 percent of the "true" radon or decay product concentration for concentrations at or above 4 pCi/L**).

It is important to emphasize to the technical director of the Rn lab the **DIFFERENT MEANINGS** between the 10% Rel. Std. Deviation (or 'COV' as mentioned in the paragraph above) and the simple 14% RPD.

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- **The 10% RSD limit** is calculated from many measurements (20 minimum) taken over an extended period of time. It is NOT appropriate to try to evaluate this number based upon the readings of a single pair of duplicate measurements. In real terms, it is a number used for evaluating the "**LONG TERM PRECISION**", **taken over AT LEAST 20 MONITORING EVENTS, using co-located devices.** In mathematical terms, it is the "typical" or "standard" deviation calculated from **ALL THE DIFFERENCES** (may use raw difference or relative percent difference) **BETWEEN ALL THE INDIVIDUAL PAIRS** of duplicate measurements. The standard deviation is therefore derived from many events, at many different Rn levels, using duplicate measurements taken by more than one device during several deployments.

- **The 14% RPD limit** is a simple calculation based solely upon **the difference between ONE PAIR** of readings taken during **ONLY ONE monitoring event.**

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LAB ID and/or LABORATORY NAME:	
ASSESSOR NAME:	DATE:

ELECTRET by Voltametry

Method Number: ELAP method number 7034

SOP Number:

Revision Number:

SOP Date:

Personnel / Data Records observed:

General LLD: < 1 pCi/L

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Question	Y	N	NA	Codes	Comments
RADON IN AIR					
1. Are both of the following EPA publications available at the lab:					
a. Protocols for Radon and Radon Decay Product Measurements in Homes? (EPA 402-R92-003)				N002	
b. Indoor Radon and Radon Decay Product Measurement Device Protocols? (EPA 402-R92-004)				N003	
2. Does the facility monitor Radon levels in air for a minimum of 48 continuous hours, process the collective data and interpret the result for the client (rather than merely distributing devices)?				N004	
3. Is a written standard operating procedure (SOP) available? (Duplication of the protocols will not suffice.)				N005	
a. Does the analyst follow the manufacturer's instructions, the US EPA protocols and the lab's SOP?				N072	
4. Is a written quality assurance project plan (QAPP) appropriate to each device available?				N006	
5. Does the data collection log include:					
a. Date and time of deployment?				N007	
b. Date and time of removal?				N008	
c. Condition of the devices?				N009	
d. Attainment of closed building conditions?				N010	
e. Exact location of device (i.e., building, room and sampling position) within the property being monitored?				N011	
f. Serial number, model number, and manufacturer of the detector?				N012	
g. Unique identifier of client and client's address (if different from testing location)?				N013	
h. Condition of crawl space vents?				N014	
6. Are monitoring devices deployed and retrieved by trained employees of the radon laboratory?				N015	
7. When monitoring devices are set out and picked up by different persons, is this noted in the record?				N016	
8. Is a qualifying statement used if the lab does not control the monitoring process (i.e., placed and/or retrieved by persons other				N017	

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Question	Y	N	NA	Codes	Comments
than trained lab personnel)?					
9. Are all devices deployed for 48 continuous hours if the measurement is used for remedial action or to determine the need for further measurements?				N018	
10. Is the technical director of the laboratory aware of the device's Lower Limit of Detection (LLD), and has the background level been determined? (Short term ~0.2 pCi/L; Long term ~0.3 pCi/L)				N019	
EQUIPMENT					
1. Are electret ion chamber radon detectors (ECs) of the type recommended for the exposure period and concentration? (Short term (ES) 2-7 days; Long term (EL) 1-12 months)				N117	
2. Is an instruction sheet provided to the client?				N118	
3. Is a shipping container provided to the client with a label for returning the detector(s)?				N119	
4. If the analysis is not performed in a temperature-controlled room, is the temperature before and after analysis recorded?				N120	
a. Are pre- and post-analysis temperatures within 10 degrees F?				N120A	
b. Is the manufacturer's recommended temperature correction factor applied?				N120B	
5. Are pre- and post-sampling voltages recorded?				N121	
a. Is a record of the pre- and post-sampling volatages maintained?				N121A	
b. Is the post-sampling voltage above 150 volts?				N121B	
6. Are devices recharged when minimum voltage is reached? (See manufacturer's instructions.)				N121C	
QUALITY CONTROL					
1. Is a reference electret used to check the reader weekly or with each use?				N123	
a. Is there a record of the weekly or each use reference				N124	

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Question	Y	N	NA	Codes	Comments
check?					
2. Is the meter zeroed according to the manufacturer's instructions?				N125	
a. Is there a record of the meter zeroing check?				N126	
Laboratory Control Detectors					
3. Has the background gamma exposure been checked prior to the use of the detectors?				N128	
a. Have at least 10 or 5% of the electrets, whichever is smaller, been checked for voltage drift?				N129	
b. Is a background gamma exposure record available?				N130	
4. Have the detectors been kept in a low Radon environment with the caps on for a period of time similar to that used in the homes?				N131	
5. Is the voltage drop for short term electrets (ES) less than 1 volt per week over three weeks?				N132	
6. Is the voltage drop for long term electrets (EL) less than 1 volt per month over three months?				N133	
Duplicate Collocated Detectors					
1. Are duplicate detectors installed in homes at the rate of 10% of deployed detectors each month or 50, whichever is smaller?				N135	
2. Are the duplicates systematically distributed throughout the workload?				N136	
3. Are the duplicates handled identically to the samples?				N137	
4. Are the duplicates not identified as such to the analyzing laboratory (i.e., submitted blindly)?				N138	
5. Is the precision of the duplicate data from radon levels measured at 4 pCi/L or above within 10% Relative Standard Deviation (RSD: for a long-term series of duplicate measurements), or 14% Relative Percent Difference (RPD: for a single pair of duplicates)?				N139	
6. Are the data from duplicates available (e.g., control charts)?				N140	
7. Are the acceptance limits for duplicates determined?				N141	
Spiked Samples					

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Question	Y	N	NA	Codes	Comments
1. Are spiked samples with known radon exposures submitted at the rate of 3 per 100 measurements, with a minimum of 3 per year and a maximum of 6 per month?				N145	
2. Are spiked samples labeled as routine samples?				N146	
3. Are the results of spiked samples kept as part of the record (e.g., control charts)?				N147	
4. If the acceptance limits are exceeded, is the source of the problem determined?				N147A	
SYSTEM CALIBRATION					
1. Has either the manufacturer or the user calibrated the complete system (detectors and readers) in a Radon Chamber yearly?				N149	
2. Has a minimum of 10 detectors been exposed at a minimum of 3 different concentrations?				N150	
3. Is the exposure period sufficient to allow the detector to achieve equilibrium with the chamber atmosphere?				N151	
4. If the manufacturer is performing the calibration, does the lab utilize the correct calibration coefficient?				N151A	
RECORD KEEPING					
1. Are the following record(s) kept for 5 years by the measurement organization:					
a. A copy of the final report including measurement results and the statement outlining any recommendations concerning retesting or mitigation provided to the building occupant or agent?				N237	
b. The address of the building monitored including zip code?				N238	
c. The exact locations of all deployed measurement devices? (Examples: room sketches, detailed written description)				N239	
d. Exact start and stop dates and times of the measurement period required for analysis?				N240	
e. A description of the device used including the device identification number and serial number, if applicable?				N241	
f. A description of the condition of any permanent vents?				N242	
g. The name of the service organization used for calibrations and the certificates of calibration?				N243	

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Question	Y	N	NA	Codes	Comments
h. The name of the individual who conducted the test along with their associated training records?				N244	
i. A description of any variations from or uncertainties about standard measurement procedures, closed building conditions, or other factors that may affect the measurement result?				N245	
j. A description of any non-interference controls and copies of signed non-interference agreements?				N246	
k. A record of any quality control measurements associated with the test?				N247	
l. The written authorization from the client enabling the lab to report results to a third party (if applicable)?				N254	
REPORTING					
1. Does the lab report the result with an uncertainty or error factor, if one is provided by the manufacturer?				N249	
2. Are results calculated correctly?				N262	
3. Are field duplicate readings, if available, reported in an acceptable manner? (See EPA 402R92-003).				N259	

Attachment 3 – Proposed language for radon tester/mitigator licensing legislation

AN ACT relating to radon gas certifications.
Be it enacted by the General Assembly:

Title
Radon Measurement and Mitigation – License and Certification

1. Definitions.

As used in this section, unless the context requires otherwise:
(1) "Alter" means to change or modify a building or building design, or to revise, rather than repair, a mitigation system or mitigation system design;
(2) "Building" means any structure used or intended to be used for supporting or sheltering any use or occupancy;
(3) "Certified" means meeting the requirements of a certification program recognized by the Department for radon measurement or radon mitigation;
(4) "Commissioner" means the commissioner of the Department of Labor;
(5) "Compensation" means something of value given or received in exchange for radon measurement or radon mitigation;
(6) "Department" means the Department of Labor;
(7) "Direct supervision" means onsite supervision by a certified person;
(8) "Government agency" means the State, a state agency, a political subdivision, or any entity of local government;
(9) "Laboratory analysis" means the act of analyzing for radon or radon progeny concentrations with passive measurement devices, or analyzing data from a continuous radon monitor or electrets; the act of calibrating radon or radon progeny measurement devices, or the act of exposing radon or radon progeny devices to controlled concentrations of radon or radon progeny;
(10) "Measurement" means the act of testing the air or potable water for the presence of radon or radon progeny in the indoor environment of a building using an active or passive measurement device;
(11) "Measurement device" means any active or passive device approved by a certification or proficiency program and used for the measurement of radon or radon progeny in air or potable water in the indoor environment of a building;
(12) "Measurement professional" means a person certified by a credentialing program recognized by the Department who provides radon measurement for compensation and who meets the requirements of Section 3 of this Act;
(13) "Mitigation" means the act of installing, repairing, or altering an active or passive system, for the purpose in whole or in part of reducing the concentration of radon or radon progeny in the indoor environment of a building;
(14) "Mitigation professional" means a person certified by a credentialing program recognized by the Department who provides radon mitigation for compensation and who meets the requirements of Section 4 of this Act;
(15) "Mitigation system" means any active or passive system designed to reduce radon concentrations in the indoor environment of a building;
(16) "Credentialing Body" means an EPA- recognized provider of radon certification to qualified persons

(17) "Radon" means a naturally occurring radioactive element that exists as a colorless, odorless, and tasteless inert gas;
(18) "Radon laboratory" means a business entity certified by the NYS Department of Health's Environmental Laboratory Approval Program to measure radon and radon progeny in air and potable water;
(19) "Radon progeny" means any combination of the radioactive decay products of radon;
(20) "Licensee" means a person or business entity licensed by the Department as a radon measurement professional or radon mitigation professional;
(21) "Standard" means a current written document developed and continuously maintained according to the requirements of the American National Standards Institute (ANSI) or by a standards development organization accredited by the ANSI that describes in detail commonly accepted methods for the performance of certain tasks.

2. Prohibition against conduct of radon measurement or mitigation without license - Business entities - Exceptions.

(1) No person or business entity shall conduct radon measurement or mitigation in this State after January 1, 202X, without the appropriate license pursuant to this Act. No person or business entity shall advertise or claim to be a "radon measurement professional," or "radon mitigation professional" unless licensed pursuant to this Act.
(2) A business entity may engage in radon measurement or mitigation if the owner or an employee associated with the business entity is a measurement or mitigation professional, as applicable, and performs or supervises the work as applicable, Any business entity that employs persons to perform measurement or mitigation must have a business entity license.
(3) Licensure requirements under this section shall apply to a radon measurement professional, measurement business or mitigation professional and mitigation business, but shall not apply to:
  (a) A person performing measurement or mitigation on a single-family residential building that he or she owns and occupies or on a rental property that he or she occupies;
  (b) A person performing measurement who assists, and is under the direct supervision of, a measurement professional;
  (c) A person performing mitigation who assists, and is under the direct supervision of, a mitigation professional; or
  (d) An agent of the federal, state, or local government agency acting within an official capacity;

3. Licensure of a radon measurement professional — Renewal of license — Duties of measurement professional.

(1) The Department shall issue a radon measurement professional license to any person certified for measurement who:
  (a) Completes an application and pays a fee prescribed by the Department;
  (b) Presents current proof of certification by a credentialing body acceptable to the Department.
  (c) Furnishes evidence of a general liability insurance policy that satisfies the requirements of this Act.
(2) The Department shall renew the radon measurement professional license of any person who:
  (a) Completes a renewal application and pays a fee prescribed by the Department;

(b) Presents current proof of certification by a credentialling body acceptable to the Department.; and
(c) Furnishes evidence of a general liability insurance policy that satisfies the requirements of this section.

(3) A measurement professional shall:
(a) Maintain certification by a credentialling body acceptable to the Department;
(b) Ensure all measurements are conducted in accordance with the applicable standard;
(c) Maintain a quality assurance plan in accordance with the standard for measurement systems quality assurance;
(d) Ensure all measurements are conducted by or under the direct supervision of a measurement professional;
(e) Use or sell only measurement devices approved by the proficiency program that certifies the person;
(f) Report all measurements as prescribed by the Department of Health; and
(g) Ensure all sample analysis is conducted by a radon laboratory approved by the Department of Health Environmental Laboratory Approval Program.

4. Licensure of mitigation professional — Renewal of license — Duties of mitigation professional.

(1) The Department shall issue a mitigation professional license to any person certified for mitigation who:
(a) Completes an application and pays a fee prescribed by the Department;
(b) Presents proof of certification by a credentialing body acceptable to the Department; and
(c) Furnishes evidence of a general liability insurance policy that satisfies the requirements of this Act.

(2) The Department shall renew the mitigation professional license of any person who:
(a) Completes a renewal application and pays a fee prescribed by the Department
(b) Presents current proof of certification by a credentialing body acceptable to the Department; and
(c) Furnishes evidence of a general liability insurance policy that satisfies the requirements of this Act

(3) A mitigation professional shall:
(a) Maintain certification by a credentialing body acceptable to the Department;
(b) Ensure all mitigations are conducted in accordance with the applicable mitigation standard;
(c) Maintain a quality management plan in accordance with the applicable standard;
(d) Ensure all mitigation is conducted by or under the direct supervision of a mitigation professional;
(e) Report all mitigations as prescribed by the Department of Health; and
(f) Ensure all radon mitigation systems repaired or altered on or after January 1, 202X, meet the applicable mitigation standard and are tested by a measurement professional within thirty days.

5. Licensure of Business Entities

(1) The Department shall issue a radon business entity license to any business who:
(a)Completes an application and pays a fee prescribed by the Department

(b) Designates a responsible person certified by a credentialing body acceptable to the Department; and
(c) Furnishes evidence of a general liability insurance policy that satisfies the requirements of this Act..

(2) The Department shall renew the radon business entity license of any person who:
(a) Completes a renewal application and pays a fee prescribed by the Department
(b) Designates a responsible person certified by a credentialing body acceptable to the Department; and
(c) Furnishes evidence of a general liability insurance policy that satisfies the requirements of this Act

6. Liability insurance policy requirement

Each radon mitigation professional and radon measurement professional shall maintain an insurance policy in effect at all times and concurrent with the licensure and certification period that:

(1) Is issued by an insurance company or other legal entity permitted to transact insurance business in the state;
(2) Provides for general liability coverage for measurement professionals in an amount specified by the Department
(3) Provides for general liability coverage for mitigation professionals and radon laboratories in an amount specified by the Department;
(4) Lists the Department as a certificate holder of any insurance policy issued under this section; and
(5) A liability insurance policy obtained pursuant to this Section shall not be cancelled, revoked, or terminated by the owner, nor shall the owner take action that would result in the cancellation, revocation, or termination of such insurance policy, except after notice to the Department at least forty-five days in advance of such cancellation, revocation, or termination, in a form prescribed by the Department

7. Biennial license — Lapse — Duty to report change of information.

(1) Licenses not renewed by the expiration date shall lapse and may only be reinstated upon the completion of renewal application process as prescribed by the Department.
(2) A licensee shall report any change of information submitted during the application process in writing to the Department within ten (10) days of such change taking place. The Department shall not be responsible for a licensee not receiving notices, communications, or other correspondence caused by a failure of the licensee to report changes.

8. Department's powers to examine, inspect, and test

(1) The Department or its agent or inspector may examine records of mitigation professionals, mitigation businesses measurement professionals, and measurement businesses, including but not limited to conducting inspections of mitigation system installations and measurement locations in order to ensure that radon measurement and mitigation are conducted in accordance with the applicable standard.
(2) The Department or its agent or inspector may inspect any equipment used for measurement or mitigation or photograph or sketch any portion of a site, building, or equipment involved in measurement or mitigation.

(3) Property owner's permission must be obtained before agents and inspectors of the Department enter private property to perform an inspection.
(4) A person shall not interfere with an inspection conducted by an agent or inspector of the Department.

9. Civil penalties and revocation

(1) The commissioner may, after a notice and hearing, suspend or revoke any license, or censure, fine, or impose probationary or other restrictions on any licensee for good cause shown which shall include, but not be limited to the following:
(a) conviction of a felony relating to the performance of a radon measurement or mitigation;
(b) deceit or misrepresentation in obtaining a license authorized under this article;
(c) providing false testimony or documents to the commissioner in relation to a license authorized by this article or any other license issued by the commissioner;
(d) deceiving or defrauding the public in relation to services provided for a fee that require a license; or
(e) incompetence or gross negligence in relation to radon measurement or mitigation.
(2) Violators of any of the provisions of this article may be fined by the commissioner in an amount not to exceed two thousand dollars for the initial violation and up to ten thousand dollars for each subsequent violation.

10. Location and retention of required records.

(1) Records required by this law or administrative regulations promulgated under this Act or the applicable standard, including but not limited to records of radon measurement, mitigation, quality assurance plans, quality management plans, calibration certifications, worker health and safety plans, and equipment repairs shall be retained by licensees, as applicable, for a minimum period of five (5) years or the length of time of any warranty or guarantee, whichever is greater.
(2) Records obtained by the Department are exempt from disclosure requirements, except that the Department shall make radon measurement and mitigation system records available upon request to:
(a) The owner or occupant of a building;
(b) The public aggregated at the zip code level without identifying individual property owners or addresses, and
(c) A federal agency that provides aggregated data to the public.
(3) Any measurement or mitigation professional applying for a license or license renewal shall specify, for approval by the Department, the physical or electronic location where records required under this section shall be maintained for inspection by the Department.

11. Department's responsibilities and authority

(1) The Department shall be the regulatory agency for the regulation of testing and mitigating firms and licensed individuals.
(2) The Department shall:
(a) Promulgate administrative regulations to administer, coordinate, and enforce this section, including the establishment of fees;
(b) Maintain a public list of all persons and business entities licensed by the Department;
(c) Issue a license to persons who meet the qualifications of this section;

(d) Appoint personnel to perform duties to administer this program and fix their compensation;
(e) Issue subpoenas, administer oaths, examine witnesses, investigate allegations of wrongdoing, and conduct administrative hearings to enforce this section; and
(f) Collect or receive all fees, fines, and other moneys owed pursuant to this section.

12. Radon mitigation and control fund.

(1) There is created the radon mitigation and control fund as a separate trust and agency fund in the State Treasury, to be administered by the Department. All fees, fines, and other moneys received by the Department pursuant to this section shall be deposited in the fund and shall be used for the implementation of this section and are hereby appropriated for those purposes.
(2) Any moneys remaining in the fund at the close of the fiscal year shall not lapse but shall be carried forward to the next fiscal year.
(3) Any interest earnings of the fund shall become part of the fund and shall not lapse.