

M E M O R A N D U M

October 19, 2022

TO: Planning, Housing, and Economic Development Committee

FROM: Ludeen McCartney-Green, Legislative Attorney

SUBJECT: Bill 26-22, Landlord-Tenant Relations – Radon Testing and Mitigation – Required

PURPOSE: Worksession – committee recommendation expected

Expected Attendees:

- Aseem Nigam, Director of the DHCA
- Stan Edwards, Chief of Energy, Climate, and Compliance Division, DEP
- Ryan Washington, Manager of Gov't Affairs, AOBA

Bill 26-22, Landlord-Tenant Relations – Radon Testing and Mitigation – Required sponsored by Lead Sponsor Councilmember Rice and Co-Sponsor Councilmember Katz, was introduced on September 20, 2022. A public hearing was held on October 18, 2022.¹

Bill 26-22 would:

- (1) require radon testing in rental housing;
- (2) require disclosure and mitigation of radon hazards above a certain action level;
- (3) include lease requirements for certain rental units; and
- (4) generally amend laws regarding landlord-tenant relations in the County.

BACKGROUND

According to the U.S. Environmental Protection Agency (EPA), radon is a radioactive gas that is found in soil and rock in all parts of the United States. It is formed by the decay of uranium, which is a natural process. Radon may be found in all types of homes and buildings in the United States. If there is radon gas in the ground, it can seep into a building. Radon typically moves up

¹ #RadonTesting

from the ground into a home through drains, cracks, or other holes in the foundation. Radon then can be trapped inside the home.

Studies show that radon is the second leading cause of lung cancer, behind cigarette smoking. The higher the radon level indoors, the greater the amount you breathe. Radon gas decays into radioactive particles that can get trapped in your lungs when you breathe. As they break down, these particles release small bursts of energy. This can damage lung tissue. Inhaling indoor air containing radon over a period of many years can increase your risk of getting lung cancer. Your chance of getting lung cancer from radon depends on how much radon is in your home and how much time you spend in your home. If you are a smoker or a former smoker, the risk of getting lung cancer from radon is even greater.²

Radon is colorless, odorless, and tasteless. The only way to detect radon is by testing. Most indoor radon comes from naturally occurring radon in the soil, high indoor levels are more likely to exist below the third floor. Therefore, the EPA recommends testing all homes below the third floor.

The quickest way to test for radon is with a short-term test. Short-term tests remain in your home for 2 days to 90 days, depending on the device. Because radon levels tend to vary from day to day and season to season, a short-term test is less likely than a long-term test to tell you your year-round average radon level. Long-term tests remain in your home for more than 90 days. A long-term test will give you a reading that is more likely to tell you your home's year-round average radon level than a short-term test. Testing can be done by either an individual or a professional radon company. *See*, DEP Radon Handout, © 6.

The EPA map for radon zones in Maryland designated Montgomery County as a Zone 1 area. © 7. Zone 1 means there is a predicted average radon level at or above the EPA's 4.0 pico-Curies per liter (pCi/L) action level. (pCi/L) is a measure of the amount of radioactivity in a known quantity of air.

State and County Laws

There are 37 states that require radon disclosure during real estate transactions and 4 states (Colorado, Florida, Illinois, and Maine) that require tenant disclosure by the landlord.³

Radon testing when buying a house in Maryland is optional, except for homes sold in Montgomery County. As of 2016, County law requires a single-family home located in the County tested for radon before completing a sale of the home. The radon test must be performed less than one year before the settlement date. The seller must either perform the test or permit the buyer to perform the test.⁴

² U.S. EPA Radon Guide for Tenants. https://www.epa.gov/sites/default/files/2014-08/documents/tenants_guide.pdf

³ <https://radonresources.com/blog/does-your-state-require-radon-testing/> (January 25, 2021).

⁴ Bill 31-15, Sale of Real Property - Radon Test – Single Family Home, Lead Sponsor, Councilmembers Rice and Katz. < <https://apps.montgomerycountymd.gov/cellims/BillDetailsPage?RecordId=981&fullTextSearch=31-15>>

State regulations require residential childcare buildings to test for radon;⁵ Montgomery County Public Schools conduct testing, monitoring, and mitigation practices for all schools in the County;⁶ County buildings conduct testing every 3 – 5 years; and new construction is required to install proper ventilation measures at the initial construction stage to release any potential radon gas.⁷

Bill 26-22 would seek to extend protections for tenants in rental housing by requiring radon testing, education, disclosure, and mitigation.

BILL SPECIFICS

Bill 26-22 would require a landlord to conduct radon testing prior to a tenant's occupancy for any rental housing that is a single-family home or multi-family building. At the time of lease signing, the landlord is required to provide education pamphlets about radon, testing, and mitigation as recommended by the EPA, or Department of Environmental Protection (DEP). Radon testing and educational information are required only for dwelling units located below the third floor of a building.

An existing tenant may conduct a self-test for the presence of radon, and if the results are above EPA's action level of 4 pCi/L, the tenant must notify the landlord in writing. The landlord is required to initiate a confirmatory test within 14 days of the tenant's notice. If the confirmatory test results are above the action level, the landlord must notify all the tenants in the building and within a certain timeframe, conduct mitigation efforts to reduce the presence of radon in the tenant's dwelling unit.

A landlord who fails to timely mitigate the presence of radon may permit and trigger the option for the tenant to terminate the lease, without penalty.

PUBLIC HEARING

The Council heard from speakers and received written testimony generally in support of Bill 26-22. Aseem Nigam, Director of DHCA, on behalf of the County Executive, testified in support, see testimony on page ©28. Individuals and organizations that also expressed *support with amendments* included, the American Association of Radon Scientists and Technologists (AARST) testimony at ©31, the Apartment and Office Building Association (AOBA) at ©35, Donohoe (proposed amendments described below, #1, testimony at ©30), Greater Capital Area Association of Realtors (©37), Rad Elec (proposed amendments described below, #2, testimony at ©34).

⁵ COMAR 14.31.06.07, 2015

⁶ <https://www.montgomeryschoolsmd.org/departments/facilities/maintenance/radon-results.aspx>

⁷ International Residential Code (Appendix F)

SUMMARY OF IMPACT STATEMENTS

FISCAL IMPACT (FIS): OMB requested an extension to submit the FIS to the Council by October 25, 2022. ©15.

ECONOMIC IMPACT: OLO anticipates that Bill 26-22 would have a net negative impact on economic conditions in the County in terms of the Council's priority indicators. Certain landlords would incur higher operating costs associated with radon testing and mitigative actions, while certain tenants would experience higher rents because of landlords passing through costs. On the other hand, certain home improvement retailers and businesses specializing in radon testing/mitigation would gain revenues because of higher demand for radon testing and mitigation technology and services. ©16.

RACIAL EQUITY AND SOCIAL JUSTICE: OLO anticipates Bill 26-22 could have a favorable impact on RESJ in the County, since Black and Latinx renters will disproportionately benefit from reduced radon exposure in rental housing. OLO considered the effect this Bill could have on addressing racial disparities in health and health care. Local data on lung cancer presented in the previous section suggests Black and White residents could benefit from reduced radon exposure, since White residents experience a higher mortality rate. ©9.

ISSUES FOR THE COMMITTEE'S DISCUSSION

The Committee may review and discuss the following:

1. Amend radon testing to ground-floor and basement units.

As introduced, the bill requires a landlord to conduct radon testing for units below the third floor because most indoor radon comes from naturally occurring radon in the soil, high indoor levels are more likely to exist below the third floor. However, the Council has received feedback from experts in the radon industry (See, *Evaluating and Assessing Radon Testing in Multifamily Housing* ©21) that a multifamily dwelling housing that has direct soil contact with the earth is more susceptible to radon exposure and requires testing; therefore, the recommendation is the bill should have a more targeted, narrow approach with 100% testing of ground-contact units in multifamily buildings. Council staff recommends the following amendments:

Amend lines 25-28, as follows:

- (a) Applicability. This Section applies to any ground-contact or basement unit of a residential rental in [any rental housing that has a unit below the third floor of a residential building:]
- (1) a single-family home; or
 - (2) a multifamily dwelling [unit] building.

Decision Point: Whether to amend applicability for radon testing to ground-floor level and basement units?

2. Align the action level for radon mitigation with the EPA’s recommended action level.

The EPA’s action level for radon is 4 pCi/L (picocuries per liter) or more. If a radon test result is equal to or greater than 4 pCi/L, EPA recommends mitigation to reduce elevated levels. While there is no safe level of radon and the EPA suggests that even mitigation to a level of 2 pCi/L or below would significantly minimize exposure, it can be very difficult to achieve this level and cost prohibitive. The "action level" was set at 4 pCi/L partly because it is technically possible to reduce radon to 4 pCi/L in most homes. Also, mitigation efforts may include “repair” or “alteration” to the premises (the amendment below includes the option to delete both terms). Council staff suggests an amendment to strike the provision to mitigate below 2 pCi/L and instead align with EPA’s action level.

Amend lines 13 and 57, as follows:

- (a) Definitions. In this Section, the following terms have the meanings indicated:
Action Level means the level of radon in a building, which if, equal to or above the EPA’s recommended action level, triggers mitigation.
- (f) Mitigation of Radon. A landlord who receives notice under subsection (e), must:
 - (1) within 14 days of notice, initiate a follow-up test, in accordance with EPA-recommended standards for testing, to confirm any presence of radon hazard; and
 - (2) within 90 days of confirmed results, mitigate[, repair, or alter] the premises to reduce radon [level to 2 pCi/L or below.] concentrations below the EPA’s action level.

Decision Point: Whether to amend and require mitigation at the action level recommended by the EPA?

3. How many times can an existing tenant conduct radon testing and require the landlord to respond?

As drafted, the bill allows an existing tenant to conduct radon testing, at their own discretion, and it could be done regularly or continuously throughout the leasing period. EPA encourages tenants to proactively conduct testing; however, testimony received from GCAAR and AOBA indicates that without a limit on testing, it may become overburdensome for the landlord

to receive multiple tests throughout the year. As a friendly amendment, GCAAR suggests, and Council staff agrees, with the following:

Amend lines 47, as follows:

(e) Testing and notification by existing tenants. An existing tenant may conduct a radon test, once during the lease term, for the dwelling unit covered by this Section. If the test results indicate that radon hazard is present at a level of 4 pCi/L or higher, the tenant must:

(1) in writing; and

(2) within 14 days of the test results, notify the landlord.

4. What happens if a tenant or a landlord disputes a test result?

Since there may be a dispute between a tenant's test result and the test result from a landlord or other radon test professional, an amendment suggested by the Maryland Chapter of the American Association of Radon Scientists and Technologists (MD AARST) would include the following provision for resolving a dispute.

Amend line 58, as follows:

(g) **Dispute of testing results.** When there is a case of conflicting test results, the following applies:

(1) testing performed in compliance with the EPA-recommended standard, by a radon professional (for hire) must supersede tests not performed by a radon professional;

(2) if both tests are performed by radon professionals, long-term testing results (180 days) must supersede short-term test results (90 days); or

(3) if both tests are equally valid, as specified in subsections (1) and (2), and the dispute remains, then a mutually agreed upon third-party radon professional must retest in accordance with EPA-recommended standards.

Decision Point: Whether the Committee should adopt an amendment to include a procedure for any conflicting or disputed test results?

5. Notice to Landlord Regarding Termination of Lease

As drafted, the bill would allow a tenant to terminate a lease, if the landlord does not mitigate radon levels in a house, apartment, or unit. Council staff recommends an

amendment that would require the tenant to provide the landlord with a 30-day notice prior to terminating the lease.

Amend line 64, as follows:

Termination of Lease. A tenant may have the option to terminate a lease agreement if the landlord fails to mitigate under subsection (f) without loss of security deposit or any other financial penalty. A tenant must provide the landlord with a 30-day notice prior to vacating the premises.

Decision Point: Whether the Committee would amend the termination of lease provision to include a 30-day vacate notice to the landlord?

6. Clarifying amendments suggested by the Office of the County Attorney (OCA)

Replace “days of” with “days after” in lines 51, 54, and 56.

- Line 51: within 14 days [of] after the test results, notify the landlord.
- Line 54: within 14 days [of] after notice, initiate a follow-up test to confirm any presence of radon hazard; and
- Line 56: within 90 days [of] after confirmed results, mitigate, repair, or alter the premises to reduce the radon level to 2 pCi/L or below.

Decision Point: Whether the Committee would adopt the clarifying amendments as suggested by the OCA?

This packet contains:

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Bill No. 26-22
Concerning: Landlord-Tenant Relations –
Radon Testing and Mitigation –
Required
Revised: 10/20/22 Draft No. 4
Introduced: September 20, 2022
Expires: March 19, 2024
Enacted: _____
Executive: _____
Effective: _____
Sunset Date: None
Ch. _____, Laws of Mont. Co. _____

COUNTY COUNCIL FOR MONTGOMERY COUNTY, MARYLAND

Lead Sponsor: Councilmember Rice
Co-Sponsor: Councilmember Katz

AN ACT to:

- (1) require radon testing in rental housing;
- (2) require disclosure and mitigation of radon hazards above a certain action level;
- (3) include lease requirements for certain rental units; and
- (4) generally amend laws regarding landlord-tenant relations in the County.

By amending

Montgomery County Code
Chapter 29, Landlord-Tenant Relations
Section 29-30

By adding

Montgomery County Code
Chapter 29, Landlord-Tenant Relations
Section 29-35E

Boldface	<i>Heading or defined term.</i>
<u>Underlining</u>	<i>Added to existing law by original bill.</i>
[Single boldface brackets]	<i>Deleted from existing law by original bill.</i>
<u>Double underlining</u>	<i>Added by amendment.</i>
[[Double boldface brackets]]	<i>Deleted from existing law or the bill by amendment.</i>
* * *	<i>Existing law unaffected by bill.</i>

The County Council for Montgomery County, Maryland approves the following Act:

Sec. 1. Section 29-30 is amended and Section 29-35E is added, as follows:

29-30. Obligations of landlords.

- (a) Each landlord must reasonably provide for the maintenance of the health, safety, and welfare of all tenants and all individuals properly on the premises of rental housing. As part of this general obligation, each landlord must:

* * *

(12) comply with Section 29-35E.

* * *

29-35E. Radon Testing

- (a) Definitions. In this Section, the following terms have the meanings indicated:

Mitigation means measures designed to permanently reduce indoor radon concentrations.

Multifamily dwelling has the same meaning as in Section 29-1.

Radon has the same meaning as stated in Section 40-13C(a).

Radon test has the same meaning as in Section 40-13C(a).

Radon hazard means exposure to indoor radon concentrations at or in excess of the United States Environmental Protection Agency's recommended radon action level.

Single-family home means a single-family detached or attached residential building. A single-family home does not include a residential unit in a condominium or a cooperative housing corporation.

Tenant has the same meaning stated in Section 29-1.

- (b) Applicability. This Section applies to any rental housing that has a unit below the third floor of a residential building in:

(1) a single-family home; or

- (2) a multifamily dwelling unit.
- (c) Radon testing - required. A landlord of a single-family home or multifamily dwelling unit must conduct a radon test before leasing a unit to a prospective tenant.
- (d) Lease requirements. At the time of lease signing, the landlord must provide to the tenant and certify in the lease, or an addendum to the lease, the following:
- (1) a copy of radon test results that indicates any concentration of radon is below the United States Environmental Protection Agency's (EPA) recommended action level of 4 picocuries per liter (pCi/L);
 - (2) the test was performed less than three (3) years before the date of the lease; and
 - (3) a copy of the EPA's pamphlet on radon guide for tenants or an equivalent pamphlet approved for use by the Department of Environmental Protection. The copy of the pamphlet may be an electronic link to the applicable website, or if requested by the tenant, a hard copy.
- (e) Testing and notification by existing tenants. An existing tenant may conduct a radon test in the dwelling unit covered by this Section. If the test results indicate that radon hazard is present at a level of 4 pCi/L or higher, the tenant must:
- (1) in writing; and
 - (2) within 14 days of the test results, notify the landlord.
- (f) Mitigation of Radon. A landlord who receives notice under subsection (e), must:

(1) within 14 days of notice, initiate a follow-up test to confirm any presence of radon hazard; and

(2) within 90 days of confirmed results, mitigate, repair, or alter the premises to reduce the radon level to 2 pCi/L or below.

(g) *Disclosure of Radon.* A landlord must disclose to each tenant, in writing, within 14 days after a confirmed radon test, any elevated radon concentrations (above EPA's recommended radon action level) that are known to be present within the dwelling.

(h) *Termination of Lease.* A tenant may have the option to terminate a lease agreement if the landlord fails to mitigate under subsection (f) without loss of security deposit or any other financial penalty.

LEGISLATIVE REQUEST REPORT

Bill 26-22

Landlord-Tenant Relations - Radon Testing and Mitigation– Required

DESCRIPTION:	Bill 26-22 would: • require radon testing in rental housing; • require mitigation and disclosure of radon hazards above a certain level; • include lease requirements for certain rental units; and generally amend the laws regarding the landlord-tenant relations in the County.
PROBLEM:	Radon is a radioactive gas that is found in soil and rock in all parts of the United States. It is formed by the decay of uranium, which is a natural process. Radon may be found in all types of homes and buildings in the United States. Studies show that radon is the second leading cause of lung cancer, behind cigarette smoking. The higher the radon level indoors, the greater the amount you breathe. Montgomery County has been designed as Zone 1 area for high levels of radon.
GOALS AND OBJECTIVES:	Require landlords to conduct testing, provide education materials, disclose test results, and mitigate radon in rental housing. In addition, to reduce environmental hazards within rental housing and increase education and tenant awareness.
COORDINATION:	DEP; DHCA
FISCAL IMPACT:	To be provided by OMB
ECONOMIC IMPACT:	To be provided by OLO
RESJ IMPACT:	Office of Legislative Oversight
EVALUATION:	To be done.
EXPERIENCE ELSEWHERE:	To be researched.
SOURCE OF INFORMATION:	Ludeen McCartney-Green, Legislative Attorney
APPLICATION WITHIN MUNICIPALITIES:	Municipalities can opt-in
PENALTIES:	Chapter 29

RADON

A Quick Guide to Protecting Your Home

Radon is an invisible, radio-active gas created during the naturally occurring breakdown of uranium in rocks and soils.

Radon gas enters homes and buildings through cracks and other openings in the foundation. It can create a serious health risk.

According to the United States Environmental Protection Agency (EPA), radon is responsible for roughly 21,000 lung cancer deaths each year. In fact, the U.S. Surgeon General has warned that radon is the second leading cause of lung cancer in the United States and is the leading cause of lung cancer in nonsmokers.

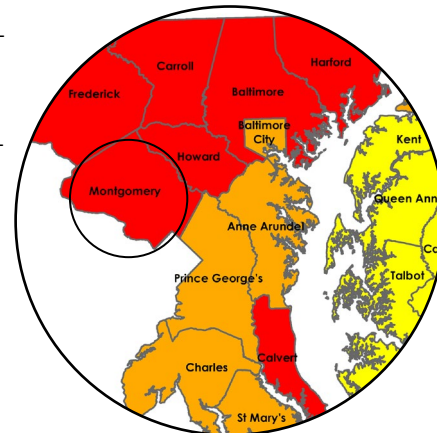
Average Indoor Radon Levels by County

■ = Above 4 pCi/L

■ = 2 to 4 pCi/L

■ = Below 2 pCi/L

EPA Region 3 Map



EPA studies show that Montgomery County's average indoor radon level is above the recommended safe amount of 4 pCi/L.

Testing Your Home

Testing your home is the only way to know if you and your family are at risk.

To perform the test yourself, pick up a testing device from a home improvement retailer or *online*. Testing can also be done by a radon professional.

- **Short-term devices** test over a span of days. They are a quick and inexpensive way to screen for radon.
- **Long-term devices** measure levels for 3 months or more. They take day-to-day fluctuations into account and provide a better long-term average reading.

Before purchasing a device, refer to the list of recommended devices at:
montgomerycountymd.gov/radon

Reducing High Radon Levels in Your Home

If your test results are 4 pCi/L or higher, the EPA recommends further action. For more information on understanding your test results, go to **sosradon.org/results**.

If you have tested your home and confirmed that you have elevated radon levels, consult a qualified radon mitigation contractor.

Find A Professional

These two organizations can help identify professionals in your area who are certified in radon testing and mitigation:

- **American Association of Radon Scientists and Technologists:**
aarst-nrpp.com
- **National Radon Safety Board:**
nrsb.org



montgomerycountymd.gov/radon or call 3-1-1

Outside Montgomery County: 240-777-0311 TTY: 301-251-4850



RADON

Testing Requirement for Home Sales



As of October 1, 2016, Montgomery County law requires that single-family homes must be tested for radon before completing a sale of the home. (This requirement is contained in Chapter 40 of the Montgomery County Code.)

Who performs the radon test, and when?

Testing must be performed prior to the settlement date, but no more than a year in advance.

The test may be done by the seller, the buyer, or a third party hired by either (such as a home inspector or radon testing professional).

If the seller offers the buyer the opportunity to do the test, but the buyer declines, testing becomes the seller's responsibility.

Both the seller and the buyer must receive a copy of the radon test results.

Which testing devices may be used?

The law states that the test must be done using a County-approved device.

Each device has its own directions that must be followed carefully to ensure accurate results.

For a list of testing devices that comply with the law, go to:
montgomerycountymd.gov/radon

Where does the law apply?

The radon testing requirement applies to detached homes and townhomes in Montgomery County, Maryland.

Exemptions:

- Properties in Barnesville, Kensington, Poolesville and the City of Rockville;
- Units that are part of a condominium regime or a cooperative housing corporation;
- Sales that are exempt from the transfer tax under MD Tax-Property Code, §13-207, as amended;
- Sales by a lender or an affiliate or subsidiary of a lender that acquired the home by foreclosure or deed in lieu of foreclosure;
- A sheriff's sale, tax sale, or sale by foreclosure, partition, or by a court appointed trustee;
- A transfer by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust; or
- A transfer of a home to be converted by the buyer into a use other than residential, or to be demolished.

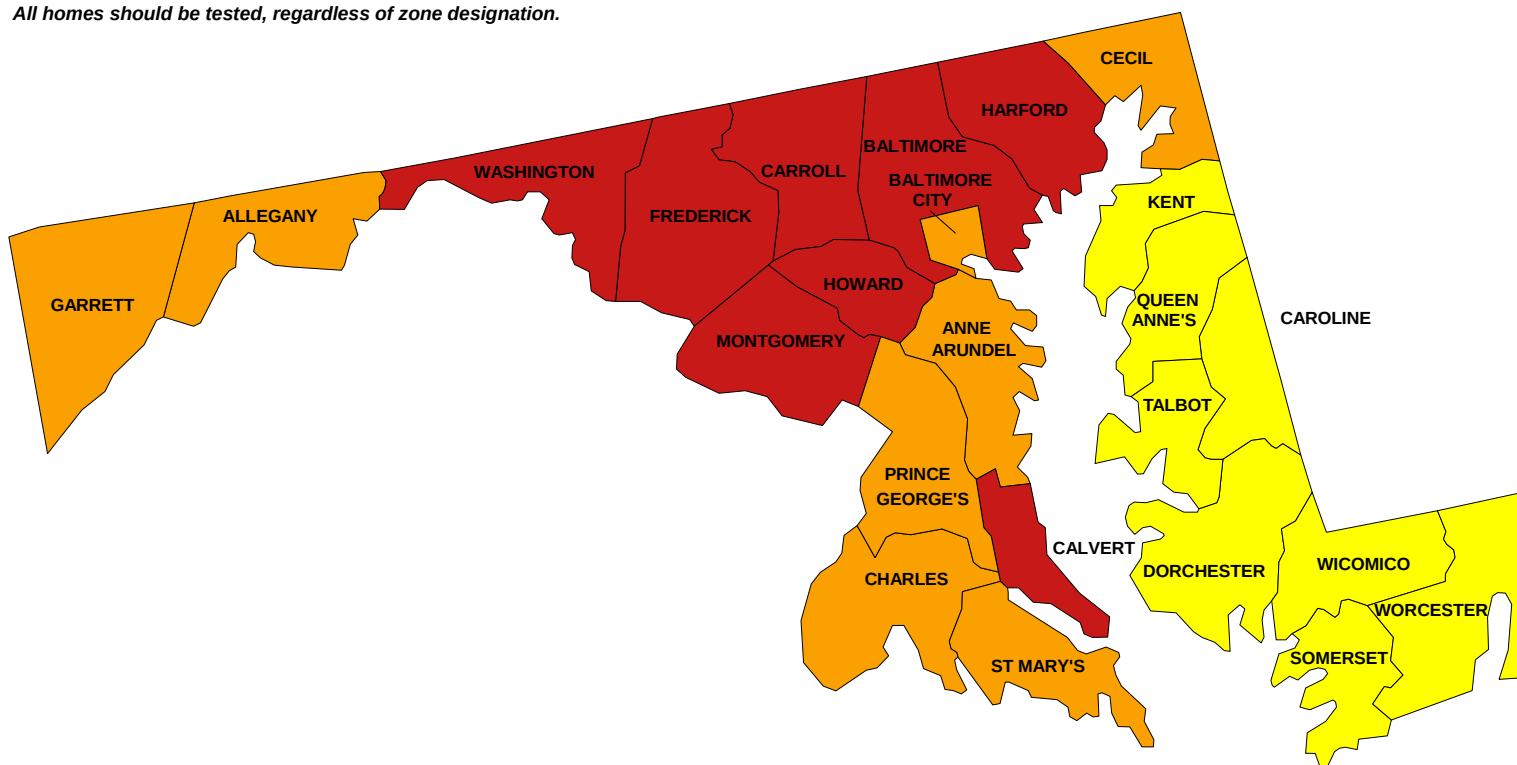
MARYLAND - EPA Map of Radon Zones

<http://www.epa.gov/radon/zonemap.html>

The purpose of this map is to assist National, State and local organizations to target their resources and to implement radon-resistant building codes.

This map is not intended to determine if a home in a given zone should be tested for radon.

All homes should be tested, regardless of zone designation.



Zone 1



Zone 2



Zone 3

IMPORTANT: Consult the publication entitled "Preliminary Geologic Radon Potential Assessment of Maryland" (USGS Open-file Report 93-292-C) before using this map. <http://energy.cr.usgs.gov/radon/grpinfo.html> This document contains information on radon potential variations within counties. EPA also recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential of a specific area.

Racial Equity and Social Justice (RESJ) Impact Statement

Office of Legislative Oversight

BILL 26-22: LANDLORD-TENANT RELATIONS – RADON TESTING AND MITIGATION – REQUIRED

SUMMARY

The Office of Legislative Oversight (OLO) anticipates Bill 26-22 could have a favorable impact on RESJ in the County, since Black and Latinx renters will disproportionately benefit from reduced radon exposure if this Bill works as intended. While BIPOC landlords could be harmed by the Bill, the potential benefits to BIPOC renters exceeds the potential harm. Given that, to the extent known, racial disparities in lung and bronchus cancer are relatively small, OLO anticipates the favorable RESJ impact of this Bill will be small.

PURPOSE OF RESJ IMPACT STATEMENTS

The purpose of RESJ impact statements is to evaluate the anticipated impact of legislation on racial equity and social justice in the County. Racial equity and social justice refer to a **process** that focuses on centering the needs, leadership, and power of communities of color and low-income communities with a **goal** of eliminating racial and social inequities.¹ Achieving racial equity and social justice usually requires seeing, thinking, and working differently to address the racial and social harms that have caused racial and social inequities.²

PURPOSE OF BILL 26-22

According to the Centers for Disease Control and Prevention (CDC), radon is the second leading cause of lung cancer after cigarette smoking. Radon is a radioactive gas that forms naturally when radioactive metals break down in rocks, soil and groundwater. People can be exposed to radon primarily from breathing radon in air that comes through cracks and gaps in buildings and homes.³

Montgomery County is among eight counties that have been designated by the U.S. Environmental Protection Agency (EPA) as having the highest potential indoor radon levels in Maryland.⁴ Testing is the only effective way to determine high levels of radon exposure in a home.⁵ The EPA and the Surgeon General recommend testing all homes below the third floor for radon.⁶

As of 2016, County law requires a single-family home located in the County to be tested for radon before completing a sale of the home.⁷ The purpose of Bill 26-22 is to extend protections to tenants by requiring radon testing, education, disclosure, and mitigation in rental housing. Radon testing and educational information would be required only for dwelling units located below the third floor of a building.⁸

Bill 26-22 would require a landlord to conduct radon testing prior to a tenant's occupancy for any rental housing. It would also require the landlord to provide educational pamphlets related to radon, testing, and mitigation at the time of lease signing. The Bill also allows existing tenants to self-test for the presence of radon, and outlines procedures for landlords to conduct confirmatory testing, mitigation efforts, and disclosure if high levels of radon are reported by a tenant in writing.⁹

RESJ Impact Statement

Bill 26-22

Bill 26-22 was introduced to the Council on September 20, 2022.

In December 2021, OLO published a RESJ impact statement (RESJIS) for Expedited Bill 43-21, Health – Advisory Board for Montgomery Cares Program – Amendments, which also considers health and health care disparities. OLO builds on Bill 43-21’s analysis for this RESJIS.

HEALTH AND HEALTH CARE DISPARITIES, LUNG CANCER AND RACIAL EQUITY

While all County residents occupying a home below a third floor face a risk of high radon exposure, racial disparities in health and health care – or differences in health and health care between groups that stem from broader inequities¹⁰ – make BIPOC residents more vulnerable to the health consequences of radon. This section provides background and data on health and health care disparities, as well as available data on lung cancer to understand the potential impact of radon exposure on County residents by race and ethnicity.

Health and Health Care Disparities. There is a long history of systemic racism in the U.S. that drives present-day health disparities among BIPOC. Enslaved Black people experienced poor nutrition and inhumane living conditions, making them more susceptible to disease and death. Further, overutilization of Black patients for medical demonstration, dissection, and risky surgical and experimental procedures – a practice that began during slavery and continued into the 20th century – fostered distrust in the medical system that lives today.¹¹

Post slavery, Black people only had sporadic access to deteriorated public hospitals that were typically reserved for the poorest residents. By the 1920s, while there was a limited number of segregated clinics operated by Black physicians, hospital and health facilities continued to be rare in the South, where most Black people resided. It was not until after the passage of Medicare and Medicaid in the 1960s – which forced the desegregation of hospitals through the 1964 Civil Rights Act – that BIPOC were able to receive access to a wider range of health care services and facilities.^{12,13}

Today, racial disparities in health care stemming from inadequate health insurance coverage largely contributes to poor health outcomes among BIPOC. People without health insurance face substantial barriers to receiving health care since most medical services are expensive or require insurance coverage. Intermittent or unstable health insurance coverage also has negative consequences, including limiting a patient’s ability to establish a sustainable relationship with a physician. Research has identified low-income and employment in jobs that do not provide health benefits as causes for high rates of uninsurance among BIPOC. Of note, these jobs often pay too much to qualify for Medicaid, but too little for employees to afford private health insurance.¹⁴

Table 1 compares rates of uninsurance in the United States and the County by race and ethnicity. Nationally, Native American and Latinx residents have among the highest rates of uninsurance. Locally, Native American, Latinx, and Black residents have the highest rates of uninsurance, with rates nearly three to eight times greater than White residents. Foreign-born residents in the County who are not U.S. citizens face among the highest rates of uninsurance at 24.3 percent.¹⁵ Of note, 32.9 percent of the County’s residents are foreign-born, and 43.5 percent of these residents are not U.S. citizens.¹⁶

RESJ Impact Statement

Bill 26-22

Table 1: Uninsurance Rates by Race and Ethnicity, United States and Montgomery County¹⁷

Race and ethnicity	Percent Uninsured, United States	Percent Uninsured, Montgomery County
White	6.1	2.3
Black or African American	9.6	6.1
American Indian and Alaska Native	19.6	14.1
Asian	5.9	4.2
Native Hawaiian and Other Pacific Islander	10.4	N
Hispanic or Latino	17.7	17.8

Source: Table S2701, 2021 American Community Survey 1-Year Estimates, Census Bureau.

Data on Lung Cancer. Since radon is the second leading cause of lung cancer, data on lung cancer disaggregated by race and ethnicity could help to approximate the groups most harmed by radon exposure. Tables 2 and 3 contain data by race and ethnicity on lung and bronchus cancer incidence and deaths in the United States and Montgomery County. Nationally, Black and White residents have the highest rates of new incidences and deaths of lung and bronchus cancer. Locally, where data were reported only for non-Latinx Black and White residents, Black residents experienced a higher incidence rate of lung and bronchus cancer, while White residents experienced a higher mortality rate.

Table 2: Lung and Bronchus, Rate of New Cancers and Cancer Deaths by Race and Ethnicity, United States, 2019

Race and ethnicity	Rate of New Cancers (per 100,000 people)	Rate of Cancer Deaths (per 100,000 people)
White	53.7	34.2
Black	53.5	34.7
American Indian and Alaska Native	37.3	22.1
Asian and Pacific Islander	33.1	19.0
Hispanic	27.5	15.0

Note: rates are age-adjusted

Source: United States Cancer Statistics: Data Visualizations, Leading Cancers by Age, Sex, Race and Ethnicity, CDC.

Table 3: Lung and Bronchus, Rate of Incidence and Mortality by Race, Montgomery County, 2012-16

Race and ethnicity	Incidence Rate (per 100,000 people)	Mortality Rate (per 100,000 people)
White (non-Latinx)	27.1	24.6
Black (non-Latinx)	29.7	20.9

Note: rates are age-adjusted

Source: 2010-19 Surveillance Report on Population Health, Office of Health Planning and Epidemiology, Montgomery County Department of Health and Human Services.

ANTICIPATED RESJ IMPACTS

To consider the anticipated impact of Bill 26-22 on RESJ in the County, OLO recommends the consideration of two related questions:

- Who are the primary beneficiaries of this bill?
- What racial and social inequities could passage of this bill weaken or strengthen?

RESJ Impact Statement

Bill 26-22

For the first question, OLO considered the demographics of renters – the residents that would most benefit from required radon testing, education, disclosure, and mitigation in rental housing. Census data summarized in Table 4 suggests that Black and Latinx households could disproportionately benefit from the Bill as they are overrepresented among renter households while White and Asian households are underrepresented. Further, the median household income of renter households in the County was \$71,240, compared to \$112,854 for all households in the County, suggesting that lower-income residents could also primarily benefit from the Bill.¹⁸

Table 4: Percent of All Households and Percent of Renter-Occupied Households by Race and Ethnicity, Montgomery County

Race and ethnicity	All Households	Renter-Occupied Households
Asian	14.7	13.3
Black or African American	19.1	31.6
White	49.0	32.8
Hispanic or Latino	15.0	20.1

Source: Table S2502, 2021 American Community Survey 1-Year Estimates, Census Bureau.

The counterpart of the first question is which groups could be most harmed by this Bill. Reports have documented the struggles of individual investor landlords, often referred to as “mom-and-pop” landlords, amid increasing COVID protections for renters.¹⁹ Comprehensive research on landlords, including with regards to their race, ethnicity, and financial standing is very limited.²⁰

Nationally, mom-and-pop landlords own 41 percent of rental units, and they are an especially significant provider of rental units in properties with four units or less (72.5 percent).²¹ Conversely, mom-and-pop landlords own 11.9 percent of rental units in properties with five or more units, making them a smaller provider of rental units in larger properties.²² Census data indicates that most renter households in the County (73.5 percent) live in properties with five or more units, suggesting that mom-and-pop landlords may provide a minority of rental housing in the County.²³ Nonetheless, the potential of smaller landlords selling their properties to institutional investors to alleviate their own financial challenges could pose an issue for preserving affordable housing in the County.²⁴

For the second question, OLO considered the effect this Bill could have on addressing racial disparities in health and health care. Local data on lung cancer presented in the previous section suggests Black and White residents could benefit from reduced radon exposure, since Black residents experience a higher incidence rate of lung and bronchus cancer, while White residents experience a higher mortality rate.

Taken together, OLO anticipates Bill 26-22 could have a favorable impact on RESJ in the County, since Black and Latinx renters will disproportionately benefit from reduced radon exposure if this Bill works as intended. Black residents, who generally experience a higher incidence rate of lung and bronchus cancer, could particularly benefit from this Bill. While BIPOC landlords could be harmed by the Bill, the potential benefits to BIPOC renters exceeds the potential harm. Given that, to the extent known, racial disparities in lung and bronchus cancer are relatively small, OLO anticipates the favorable RESJ impact of this Bill will be small.

RESJ Impact Statement

Bill 26-22

RECOMMENDED AMENDMENTS

The Racial Equity and Social Justice Act requires OLO to consider whether recommended amendments to bills aimed at narrowing racial and social inequities are warranted in developing RESJ impact statements.²⁵ OLO finds Bill 26-22 could have a favorable impact on RESJ in the County. As such, OLO does not offer recommended amendments.

CAVEATS

Two caveats to this racial equity and social justice impact statement should be noted. First, predicting the impact of legislation on racial equity and social justice is a challenging analytical endeavor due to data limitations, uncertainty, and other factors. Second, this RESJ impact statement is intended to inform the legislative process rather than determine whether the Council should enact legislation. Thus, any conclusion made in this statement does not represent OLO's endorsement of, or objection to, the bill under consideration.

CONTRIBUTIONS

OLO staffer Janmarie Peña, Performance Management and Data Analyst, drafted this RESJ impact statement.

¹ Definition of racial equity and social justice adopted from “Applying a Racial Equity Lens into Federal Nutrition Programs” by Marlysa Gamblin, et.al. Bread for the World, and from Racial Equity Tools. <https://www.racialequitytools.org/glossary>

² Ibid

³ “Radon and Your Health,” National Center for Environmental Health, Centers for Disease Control and Prevention, Last Reviewed January 3, 2022. <https://www.cdc.gov/nceh/features/protect-home-radon/index.html>

⁴ “Radon,” Department of Environmental Protection, Montgomery County, Maryland, Accessed October 5, 2022. <https://www.montgomerycountymd.gov/green/air/radon.html>

⁵ “Radon and Your Health”

⁶ “A Citizen’s Guide to Radon,” U.S. Environmental Protection Agency, December 2016.

https://www.epa.gov/sites/default/files/2016-12/documents/2016_a_citizens_guide_to_radon.pdf

⁷ Memo from Legislative Attorney Ludeen McCartney-Green to County Council, Bill 26-22, Landlord-Tenant Relations – Radon Testing and Mitigation – Required, Montgomery County Council, Introduced September 20, 2022.

https://www.montgomerycountymd.gov/council/Resources/Files/agenda/col/2022/20220920/20220920_5A.pdf

⁸ Ibid

⁹ Ibid

¹⁰ Nambi Ndugga and Samantha Artiga, “Disparities in Health and Health Care: 5 Key Questions and Answers,” KFF, May 11, 2021.

<https://www.kff.org/racial-equity-and-health-policy/issue-brief/disparities-in-health-and-health-care-5-key-question-and-answers/>

¹¹ W. Michael Byrd and Linda A. Clayton, “Race, Medicine, and Health Care in the United States: A Historical Survey,” Journal of the National Medical Association, March 2001. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2593958/>

¹² Ibid

¹³ Steve Sternberg, “Desegregation: The Hidden Legacy of Medicare,” U.S. News & World Report, July 29, 2015.

<https://www.usnews.com/news/articles/2015/07/30/desegregation-the-hidden-legacy-of-medicare>

¹⁴ Heeju Sohn, “Racial and Ethnic Disparities in Health Insurance Coverage: Dynamics of Gaining and Losing Coverage over the Life-Course,” Population Research and Policy Review, April 2017. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5370590/>

¹⁵ Table S2701: Selected Characteristics of Health Insurance Coverage in the United States, 2021 American Community Survey 1-Year Estimates, U.S. Census Bureau.

https://data.census.gov/cedsci/table?t=Health%20Insurance&g=0100000US_0500000US24031&tid=ACSST1Y2021.S2701

RESJ Impact Statement

Bill 26-22

¹⁶ Montgomery County, Maryland Profile, U.S. Census Bureau.

https://data.census.gov/cedsci/profile/Montgomery_County,_Maryland?g=0500000US24031

¹⁷ Latinx is an ethnicity rather than a race. Therefore, Latinx people are included in multiple racial groups within this table and throughout this impact statement, unless where otherwise noted. Within this table, 'N' denotes that the estimate cannot be displayed because there were an insufficient number of sample cases in the geographic area.

¹⁸ Table S2503: Financial Characteristics, 2021 American Community Survey 1-Year Estimates, Census Bureau.

<https://data.census.gov/cedsci/table?t=Owner%2FRenter%20%28Tenure%29&g=0500000US24031&tid=ACST1Y2021.S2503>

¹⁹ Michelle Conlin, "Selling Out: America's Local Landlords. Moving In: Big Investors," Reuters, July 29, 2021.

<https://www.reuters.com/business/finance/selling-out-americas-local-landlords-moving-big-investors-2021-07-29/>

²⁰ "Landlords," Message from PD&R Senior Leadership, Office of Policy Development and Research (PD&R), U.S. Department of Housing and Urban Development, June 11, 2018. <https://www.huduser.gov/portal/pdredge/pdr-edge-frm-asst-sec-061118.html>

²¹ Scholastica (Gay) Cororaton, "Landlord Statistics from the 2018 Rental Housing Finance Survey," National Association of Realtors, September 15, 2020. <https://www.nar.realtor/blogs/economists-outlook/landlord-statistics-from-the-2018-rental-housing-finance-survey>

²² OLO Analysis of 2018 Rental Housing Finance Survey

²³ OLO Analysis of 2020 American Community Survey 5-Year Estimates Public Use Microdata

²⁴ Michelle Conlin

²⁵ Bill 27-19, Administration – Human Rights – Office of Racial Equity and Social Justice – Racial Equity and Social Justice Advisory Committee – Established, Montgomery County Council



OFFICE OF MANAGEMENT AND BUDGET

Marc Elrich
County Executive

Jennifer Bryant
Director

MEMORANDUM

October 6, 2022

TO: Gabe Albornoz, President
County Council

FROM: Jennifer R. Bryant, Director
Office of Management and Budget

SUBJECT: Extension Request: Fiscal Impact Statement for Council Bill 26-22, Landlord-Tenant Relations – Radon Testing and Mitigation - Required

As required by Section 2-81A of the County Code, we are informing you that transmittal of the Fiscal Impact Statement for the above referenced legislation will be delayed because DHCA needs more time to collect the needed information from OLTA and Licensing Programs to conduct meaningful analysis on the Bill. We will transmit the Fiscal Impact Statement no later than **Tuesday, October 25, 2022.**

JRB:cm

cc: Richard S. Madaleno, Chief Administrative Officer
Fariba Kassiri, Deputy Chief Administrative Officer
Sonia Mora, Assistant Chief Administrative Officer
Earl Stoddard, Assistant Chief Administrative Officer
Jake Weissmann, Assistant Chief Administrative Officer
Debbie Spielberg, Special Assistant to the County Executive
Dale Tibbitts, Special Assistant to the County Executive
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Barry Hudson, Director, Public Information Office
Pofen Salem, Department of Housing and Community Affairs
Nicolle Katrivanos, Department of Housing and Community Affairs
Anita Aryeetey, Office of Management and Budget
Joshua Watters, Office of Management and Budget

Economic Impact Statement

Office of Legislative Oversight

Bill 26-22 Landlord-Tenant Relations – Radon Testing and Mitigation – Required

SUMMARY

The Office of Legislative Oversight (OLO) anticipates that Bill 26-22 would have a net negative impact on economic conditions in the County in terms of the Council's priority indicators. The Bill would require all landlords to test for dangerous radon levels inside rental housing units before leasing them to prospective tenants. On the one hand, certain landlords would incur higher operating costs associated with radon testing and mitigative actions, while certain tenants would experience higher rents because of landlords passing through costs. On the other hand, certain home improvement retailers and businesses specializing in radon testing/mitigation would gain revenues because of higher demand for radon testing and mitigation technology and services. Overall, OLO expects the economic benefits to these businesses to be outweighed by the economic costs to landlords and tenants, coupled with the economic leakages generated from the change in law.

BACKGROUND

Radon is an invisible, radio-active gas which enters homes and creates serious health risks for inhabitants. As of 2016, the County requires all single-family attached or detached homes located in the County to be tested for radon before completing home sales. Bill 26-22 seeks to extend this protection to tenants of rental housing. The Bill would attempt to do so by requiring all landlords of single-family homes or multifamily dwelling units to:

- conduct radon tests before leasing units to prospective tenants;
- disclose test results (performed less than three years before the lease date) indicating the radon level is below 4 pCi/L, as recommended by the U.S. Environmental Protection Agency (EPA).
- provide tenants with education materials on radon; and
- take mitigative actions to reduce the radon level to 2 pCi/L or below if tenants notify landlords of test results above the EPA's recommended level.

If landlords fail to take mitigative actions, tenants would have the option to terminate the lease agreement without loss of security deposits or any other financial penalties.

Economic Impact Statement

Office of Legislative Oversight

INFORMATION SOURCES, METHODOLOGIES, AND ASSUMPTIONS

Per Section 2-81B of the Montgomery County Code, the purpose of this Economic Impact Statement is to assess, both, the impacts of Bill 26-22 on residents and private organizations in terms of the Council's priority economic indicators and whether the Bill would have a net positive or negative impact on overall economic conditions in the County.¹ To do so, OLO assesses the following:

- whether the Bill would result in a significant increase in demand for radon testing and mitigation services among landlords;
- how the Bill would impact primary stakeholders—namely, landlords, tenants, home improvement retailers, and business specializing in radon testing/mitigation services, and
- whether the Bill's economic costs would outweigh its benefits.

The primary information sources for this analysis are OLO consultations with two local radon professionals, the County's education materials on radon, and secondary sources cited below.

VARIABLES

The primary variables that would affect the economic impacts of enacting Bill 26-22 are the following:

- radon testing rates among landlords;
- radon testing/mitigation compliance among landlords;
- percentage of radon tests performed by County-based third-parties.

IMPACTS

WORKFORCE ▪ TAXATION POLICY ▪ PROPERTY VALUES ▪ INCOMES ▪ OPERATING COSTS ▪ PRIVATE SECTOR CAPITAL INVESTMENT ▪ ECONOMIC DEVELOPMENT ▪ COMPETITIVENESS

Radon Testing and Mitigation

By requiring all landlords of single-family homes or multifamily dwelling units to conduct radon tests before leasing units to prospective tenants, OLO expects Bill 26-22 to increase the total number of rental housing units tested for radon and the frequency at which tests occur. Because the average indoor radon level in the County is above 4 pCi/L, increased radon testing likely would increase radon mitigative actions.² While OLO cannot quantify their magnitude, increases in radon testing and mitigation likely would be significant.

¹ Montgomery County Code, [Sec. 2-81B](#).

² Montgomerycountymd.gov, "[Radon](#)."

Economic Impact Statement

Office of Legislative Oversight

Indeed, there are several reasons why radon testing and mitigation are unlikely to occur in rental housing units without a legal requirement. For one, large segments of the public do not know radon causes lung cancer.³ So it is unlikely most landlords or tenants are aware of the dangers high radon levels pose. Second, because radon poses a long-term health risk, tenants who are aware of the risk may discount the future health benefits of lower exposure to radon relative to the short-term benefit of avoiding radon testing costs, particularly low-income and/or cost-burdened tenants struggling to keep up with rent.⁴ Third, per the theory of asymmetric information,⁵ landlords lack an economic incentive to inform tenants. Because they typically do not reside in their units, landlords are not frequently exposed to the risk at those sites. Thus, they may refrain from informing tenants to avoid paying for radon testing and mitigation.

In short, OLO expects the Bill to help address the likely under-production of radon testing and mitigation in local rental housing units caused from insufficient stakeholder knowledge, economic incentives, or other factors.

However, while OLO expects a significant increase in testing, certain landlords may not comply with the testing and/or mitigation requirements. As currently written, the Bill would penalize landlords for failure to mitigate by giving tenants “the option to terminate a lease agreement ... without loss of security deposit or any other financial penalty.” Depending on the total cost of mitigative action, certain landlords may decide to incur costs associated with finding new tenants.

Businesses, Non-Profits, Other Private Organizations

By increasing radon testing and mitigation more than what would likely occur in its absence, Bill 22-22 would have mixed impacts on certain private organizations in the County in terms of several indicators prioritized by the Council.

Landlords: OLO anticipates the Bill would increase operating costs for certain landlords. To comply with the radon testing requirement, landlords could either use devices purchased from home improvement retailers or online vendors or hire radon testing/mitigation professionals.⁶ Holding all else equal, these activities would increase operating costs for landlords in the form of expenses related to purchasing tests, using maintenance staff to administer them, and/or hiring businesses to conduct radon tests and, when needed, take mitigative actions. However, OLO expects a certain portion of these costs to be passed through to tenants in the form of higher rents.

Radon Testing/Mitigation Professionals: By increasing radon testing and mitigation in rental housing units, OLO expects the Bill would increase revenues for certain property inspectors and businesses specializing in radon testing/mitigation.⁷ Holding all else equal, revenue gains would increase business incomes for these entities.

³ For a systematic review of the literature on public awareness of radon, see Vogeltanz-Holm and Schwartz, [“Radon and lung cancer: What does the public really know?”](#)

⁴ For a brief overview of temporal discounting, see Behavioraleconomics.com, [“Time \(temporal\) discounting.”](#)

⁵ For an overview of asymmetric information, see Nobelprize.org, [Price in Economic Sciences 2001](#).

⁶ Montgomerycountymd.gov, [“Radon.”](#)

⁷ Based on conversations with radon professionals, there is somewhat of a divide in the market for radon testing and mitigation. Third-party radon testing is typically performed by businesses specializing in this area and some property inspectors. Radon mitigation is typically performed by businesses specializing in this area, in which some also offer radon testing.

Economic Impact Statement

Office of Legislative Oversight

Moreover, given the large number of rental housing units in the County, the Bill likely would cause certain businesses to hire more radon testing/mitigation technicians. Indeed, one radon testing professional informed OLO the 2016 County law requiring radon testing for all single-family home transactions significantly increased demand for radon testing in the County. To meet higher demand, his firm hired more radon testing technicians.

Home Improvement Retailers: The Bill likely would increase revenues for certain home improvement retailers from landlords purchasing radon tests and mitigation systems.

Beyond these potential impacts, OLO does not expect the Bill to affect private organizations in terms of the Council's other priority indicators.

Residents

OLO anticipates that enacting Bill 26-22 would have mixed impacts on certain residents in the County in terms of several indicators prioritized by the Council. As previously discussed, the Bill would increase operating costs for many landlords. Many landlords likely would pass through a portion of these costs to tenants in the form of higher rents. Holding all else equal, higher rents would reduce household income for tenants. Furthermore, increased demand for radon testing and mitigation likely would increase wages for certain residents employed as non-salaried maintenance staff for rental properties or radon testing/mitigation technicians.

Beyond these potential impacts, OLO does not expect the Bill to affect residents in terms of the Council's other priority indicators.

Net Impact

While Bill 26-22 likely would have mixed impacts on certain private organizations and residents, OLO anticipates the Bill would have an overall negative impact on economic conditions in the County in terms of the Council's priority indicators. For one, certain landlords likely would hire radon professionals or purchase radon tests or mitigation systems from businesses based outside the County. Second, a portion of expenses related to radon testing and maintenance would go to manufacturers and distributors of the technologies based outside the County. Thus, these economic leakages coupled with the economic costs to landlords and tenants likely would be greater than the economic benefits of the Bill for home improvement retailers and businesses specializing in property inspection, radon testing, and/or radon mitigation.

DISCUSSION ITEMS

Not applicable

WORKS CITED

Behavioraleconomics.com. "[Time \(temporal\) discounting](#)."

Montgomery County Code. [Sec. 2-81B, Economic Impact Statements](#).

Economic Impact Statement

Office of Legislative Oversight

Montgomery County Council. [Bill 26-22, Landlord-Tenant Relations – Radon Testing and Mitigation – Required](#).

Introduced on September 20, 2022.

Montgomerycountymd.gov. “[Radon](#).” Department of Environmental Protection.

Nobelprize.org, [Price in Economic Sciences 2001](#).

Vogeltanz-Holm, Nancy and Gary G. Schwartz. “[Radon and lung cancer: What does the public really know?](#)” *Journal of Environmental Radioactivity* 192 (2018): 26-31.

CAVEATS

Two caveats to the economic analysis performed here should be noted. First, predicting the economic impacts of legislation is a challenging analytical endeavor due to data limitations, the multitude of causes of economic outcomes, economic shocks, uncertainty, and other factors. Second, the analysis performed here is intended to *inform* the legislative process, not determine whether the Council should enact legislation. Thus, any conclusion made in this statement does not represent OLO’s endorsement of, or objection to, the Bill under consideration.

CONTRIBUTIONS

Stephen Roblin (OLO) prepared this report.

Evaluating and Assessing Radon Testing in Multifamily Housing

Michael E. Kitto, PhD; Calvin Murphy, BSBA; Sherry L. Dixon, PhD; David E. Jacobs, PhD;
Jonathan Wilson, MS; Jane Malone

ABSTRACT

Context: To determine if radon mitigation is needed to protect occupants of multifamily housing, reliable testing procedures are needed. Yet, protocols on how many ground-contact housing units must be tested vary from 10% to 25% to 100%.

Objectives: To estimate the probability of failing to identify a building containing at least one unit with elevated radon level when all ground-contact units are not tested.

Design: Retrospective analysis of previously collected data from licensed (ie, certified) radon measurement professionals using hypergeometric and Monte Carlo statistical methods to estimate the confidence that there are no units with radon levels of 4 picoCuries/liter of air (pCi/L) or more based on various testing percentages.

Setting: Testing data were obtained from 29 US states for 7892 ground-contact units in 687 multifamily buildings, primarily 5 to 20 units per building.

Main Outcome Measure: Probability of failing to identify elevated radon levels in untested units.

Results: About 15% (n = 1163) of the units had radon levels of more than 4 pCi/L (the EPA action level); 59 units had more than 20 pCi/L (maximum of 96 pCi/L). For building sizes of 5 to 20 ground-contact units, the 2018 federal testing protocols that currently require testing of 10% and 25% of ground-contact units in each building failed to identify 47%-69% and 32%-46% of the units, respectively, depending on building size.

Conclusions: Measurement of 90% of the ground-contact units in buildings with 5 to 20 ground-contact units results in up to 4% of the units with elevated radon levels being missed. To achieve 95% confidence that no units in the building have radon levels of 4 pCi/L or more in buildings up to 20 units, 100% sampling is required. For the vast majority of multifamily buildings, all ground-contact units in multifamily buildings should be tested for radon.

KEY WORDS: cancer, healthy housing, housing, radon, testing frequency

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The authors declare they have no conflicts of interest.

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Radon is a radioactive Group 1 carcinogen that is responsible for approximately 21 000, or 15% of the total, US lung cancer deaths annually.¹ Lung cancer rates increase with increasing cumulative radon exposure at the concentrations observed in homes.^{2,3} The current EPA action level for radon in the United States, established in 1986, is 4 picoCuries/liter of air (pCi/L), while the World Health Organization (WHO) established a reference level of 2.7 pCi/L in 2009. The WHO reported the Population Attributable Fraction of lung cancer from radon is between 2% and 12%, annually afflicting, for example, at least 1234 people in France and 1896 in Germany.⁴

Radon measurement protocols for multifamily housing programs and professional organizations have differed vastly in the percentage of ground-contact residential units (henceforth referred to as “units”) in multifamily housing to be tested to characterize the radon potential for the building.

Radon-testing guidelines for loans from 2 US government-sponsored enterprises (GSE), Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac), have allowed measurement through partial testing of “a minimum of 10% of the units, or one unit per building [for] units on the lowest habitable contact” with the ground. Prior to a December 2020 policy change to require testing of 100% of units,⁵ the US Department of Housing and Urban Development’s (HUD) Office of Multifamily Housing required testing only 25% of ground-level units in each building under its multifamily housing loan programs subject to the Multifamily Accelerated Processing (MAP) Guide, the Residential Care Facilities program, and the Rental Assistance Demonstration Program. Currently, no other HUD programs have a radon-testing requirement.

In contrast, the testing protocol of the American Association of Radon Scientists and Technologists (AARST) requires measurements in each of the ground-contact units.⁶ Most of the states (14 of 19) that regulate radon testing also require 100% ground-contact unit testing when a multifamily building is tested; 31 US states do not regulate radon.⁷ Measurement professionals certified by the National Radon Proficiency Program (NRPP) must follow the standard and thus conduct 100% ground-contact unit testing.

Earlier approaches applied hypothetical⁸ and small-building data⁹ to develop an evidence-based statistically sound testing protocol for multifamily housing that is sufficiently protective for the occupants without being overly burdensome to property owners. However, true probabilities based on actual measurements are needed for validated findings. This article describes an evaluation of the various percentage-based radon-testing models using measurement data from one of the largest multifamily housing radon-testing databases ever assembled. To our knowledge, this is the first national study of field data to examine the efficacy of differing multifamily testing protocols.

Methods

HUD previously detailed the statistical rationale used to develop sample sizes for testing in multifamily buildings for lead-based paint inspections that relied on a hypergeometric distribution. The sample size estimates are based on the number of units to be tested to be 95% confident that less than 5% (for pre-1960) or less than 10% (for 1960-1978) of all units in the building contain lead-based paint.¹⁰ This hypergeometric approach has also been applied to radon to calculate probabilities for detecting radon levels of

4 pCi/L or more in multifamily housing units.⁸ Wilson⁹ used a similar approach to calculate estimates for multifamily housing of 4-plex and 6-plex buildings.

For data collection, a uniform data-reporting template was distributed to participating measurement professionals. Ground-contact unit data for up to 18 variables (eg, result, testing location) were provided by measurement professionals certified by either the NRPP or the National Radon Safety Board (NRSB) and (when applicable) credentialed by a state radon program. Participation and contributions were voluntary, and preference was not given to data from any state.

All data came from measurement projects that employed a 100% testing protocol. Although testing all residential ground-contact units in a building was standard, occasionally access to a unit to deploy or retrieve a detector was problematic. To be included in this study’s database, a minimum of 90% completion was deemed acceptable for buildings with 10 or more units, and buildings with 5 to 9 units were acceptable provided at most one unit was incomplete.

Measurements were conducted about equally by calendar quarter, with the exception of nearly 40% more during the third quarter. Nearly all (88%) radon measurements were conducted using activated charcoal detectors, followed by alpha track, electret, and liquid-scintillation vial detectors. No measured units had a radon mitigation system.

This study did not include human subjects and was deemed exempt by the New York State Department of Health Institutional Review Board.

Statistical methods

For analysis of radon levels, measurement data were natural log-transformed. If the radon result was below the limit of detection, it was replaced by the limit of detection divided by the square root of 2. SAS version 9.4 was used for all analysis (SAS Statistical Software, Cary, North Carolina). There are 2 primary reasons to focus on log-transformed radon and geometric means rather than non-log-transformed radon and arithmetic means. First, researchers have found the distribution of residential radon concentrations to be satisfactorily represented by a log-normal distribution.^{8,11} Second, factors affecting radon levels are multiplicative, not additive.^{12,13}

Some analyses presented here are based on whether the current US radon threshold of 4 pCi/L is exceeded (yes/no). Other analyses are based on actual radon concentrations. For buildings with a specified number of ground-contact units exceeding a threshold, the hypergeometric probability distribution describes the

probabilities of drawing a specific number of units exceeding the threshold.

False-negatives

Using the empirical data collected in this study and the hypergeometric distribution, the percent sampled was fixed to determine confidence that there are no units with radon levels of 4 pCi/L or more. Setting 95% confidence is equivalent to capping the errors at 5%. Instead of using the most difficult case to detect (where a building only has one unit with levels of ≥ 4 pCi/L), the data collected in this study are used to determine error.

The probability for each building is based on the number of units with levels of 4 pCi/L or more and the hypergeometric distribution. For each of the percentages sampled, the probability that the sample did not include any units with levels of 4 pCi/L or more was, at most, the percentage of units that are not sampled. For example, for 90% sampling, the error is 10%, at most. (This is under the assumption that there is one unit with levels of ≥ 4 pCi/L in the building.) In this case, the maximum error is the percentage of unsampled units.

For the buildings in the study database with at least one positive unit, 27% had **only** one unit with levels of 4 pCi/L or more. These buildings therefore had the maximum error probability, which is the proportion of unsampled units. The more units with levels of 4 pCi/L or more in a building, the lower the error probability.

Total error

Another way to examine sampling errors is to estimate the probability that a wrong decision is reached with partial sampling (the average probability that testing results are all below 4 pCi/L and the building had at least one unit with levels of ≥ 4 pCi/L). These probabilities are found by multiplying the aforementioned average false-negative probabilities by the proportion of buildings with at least one unit with levels of 4 pCi/L or more.

Reliability and measurement error

Sampling within units, buildings, and properties shows the results were consistent and reliable but to varying degrees. Observational error (measurement error) is the difference between a measured value of a quantity and its true value. Because measurement error itself is hard to interpret, the reliability ratio was examined. The reliability ratio shows overall consistency of a measure and ranges from 0 to 1, where 1 is perfect reliability.

Reliability sampling

Reliability can be defined operationally as the degree of correlation between 2 measurements taken in the same housing unit. In the radon context, it is the percentage of the total variance in log radon levels that is explained by the unit, or in other words, the percentage of the total variances that is not explained by within-unit variability. For this analysis, a repeated-measures model was used to estimate the total variability and within-unit variability for units with duplicate samples. Repeated-measures models were also used to estimate the within-building and within-property variability.

Results

Ground-contact radon levels in multifamily buildings were obtained from 687 buildings located on 152 properties in 29 US states. One-third of the buildings were in locations (eg, Illinois and Ohio) where state radon licensure programs require 100% testing of ground-contact units when radon level is measured in a multifamily building. Overall, 93% of the buildings were 3 or fewer stories and 43% of the buildings were assisted living facilities.

Of the 7892 measured residential units, nearly 15% ($n = 1163$) contained radon levels of 4 pCi/L or more, which is significantly greater than the 6% estimate for national prevalence reported by the EPA.¹⁴ More than 25% of the radon results exceeded the WHO action level of 2.7 pCi/L. The arithmetic mean of 2.36 pCi/L is greater than the average of 1.25 pCi/L reported by EPA.

Of the 687 buildings, 42% of buildings have at least one unit with radon levels of 4 pCi/L or more (Table 1). Buildings with a larger footprint (>20 units) comprised only 7% of the total submitted. Nearly all building sizes have radon measurements from more than 500 units.

For buildings with 5 to 20 ground-contact units, the average radon levels varied significantly according to the number of units with radon levels of 4 pCi/L or more. Overall 59% of the units were in buildings that had no units with radon levels of 4 pCi/L or more and their radon levels averaged 1.0 pCi/L. However, the building radon levels averaged 2.1 pCi/L when a single unit in the building had levels of 4 pCi/L or more and averaged 5.1 pCi/L when more than 1 unit in the building contained radon levels of 4 pCi/L or more.

The study collected data on whether the main entry of a measured unit opened to the outdoors. Of the 3944 units that had an inside main entry, 17% of the units contained levels of 4 pCi/L or more while only 6% of the 1583 units with outdoor main entries had

TABLE 1**Summary of Radon Levels of 4 pCi/L or More in Buildings and Ground-Contact Units**

Building Size (GC Units)	Number of Buildings	Percent of Buildings With at Least One Unit ≥ 4 pCi/L	Number of Buildings With at Least One Unit ≥ 4 pCi/L	Number of Units	Percentage of Units ≥ 4 pCi/L
05-06	124	36	45	707	15
07-08	174	41	71	1,341	18
09-10	99	40	40	951	15
11-12	102	36	37	1,186	11
13-14	37	38	14	497	13
15-16	44	45	20	675	18
17-18	28	54	15	494	12
19-20	25	48	12	492	9
21-26	36	61	22	838	16
27-77	18	72	13	711	15
All	687	42	289	7,892	15

Abbreviation: GC, ground-contact.

elevated radon levels, presumably due to increased dilution with outdoor air. Analysis of variance with log-transformed radon levels was used to test whether geometric mean radon in units with inside entries was different than in homes with outside entries. Inside entry units had statistically significant ($P < .001$) higher geometric mean radon levels (1.39 pCi/L) than outside entry units (1.11 pCi/L).

Reported measurement locations were primarily (83%) “above slab” (eg, slab on grade), and this foundation type had the highest percentage of units with elevated radon levels (16%). Following this, 824 “basement” and 344 “above basement” test locations had 14% and 3%, respectively, of units with elevated radon levels.

In 1993, EPA developed radon potential maps and assigned each county to a “zone,” with zone 1 containing homes with the greatest potential of indoor radon levels of 4 pCi/L or more. These zone designations have been in common use throughout the United States. Study buildings were assigned EPA radon zones based on location. Although data were obtained from 29 states, nearly all (97%) measured buildings were in the higher radon potential zones 1 and 2. The percentages of buildings (43%-44%) and units (14%-17%) with radon levels of 4 pCi/L or more were equivalent for the 2 zones. Zone 3 buildings and units with levels of 4 pCi/L or more were 5% and 3%, respectively.

Although 58% of study buildings had no units with radon levels of 4 pCi/L or more, the results for the units with elevated radon drop off quickly with 77% below 10 pCi/L and 95% below 20 pCi/L. However, 59 units had radon levels of 20 pCi/L or more, ranging up to a maximum of 96 pCi/L.

Several states with buildings with more than 15% of units containing radon levels of 4 pCi/L or more were in temperate and hot climates. Generally, the EPA radon map equates these climates with having moderate radon potential, but due to cooling costs the demand for “tight” housing likely results in low fresh air exchange in these units and a greater probability for elevated radon levels. The climatic influence on indoor radon prevalence is further examined in Supplemental Digital Content Table S1 (available at: <http://links.lww.com/JPHMP/A827>). (Note: All subsequent analyses use the hypergeometric distribution.)

Table 2 presents the average error probabilities under the different sampling percentages. These estimates can be thought of as false-negative probabilities. A similar analysis⁸ presented previously posited sample size estimates to be 95% certain that less than 6.7% (EPA’s 1993 estimated average) and 33.3% (for states with high radon levels) of units in the building had radon levels of 4 pCi/L or more.

In buildings with all units below 4 pCi/L, one will make the right decision with testing any percentage of units. In buildings with at least one unit with levels of 4 pCi/L or more, to ensure that the probability is high that sampling identifies at least one unit with elevated radon levels, the false-negative rate must be low.

The calculation only included buildings with at least one unit with levels of 4 pCi/L or more, so it was not sensitive to the prevalence of buildings with levels of 4 pCi/L or more versus buildings containing all units below 4 pCi/L. The probability largely depends on the number of units with levels of 4 pCi/L or more in a building among the buildings with at least one unit with levels of 4 pCi/L or more.

TABLE 2
Average Probability (%) of Partial Sampling Missing a Unit in a Building^a With Levels of 4 pCi/L or More With Various Sampling Percentages

Number of Ground-Contact Units in Building	Number of Study Buildings Included	Building Radon Sampling Protocol				
		Probability (%) When 10% Sampled ^b	Probability (%) When 25% Sampled ^b	Probability (%) When 50% Sampled ^b	Probability (%) When 75% Sampled ^b	Probability (%) When 90% Sampled ^b
05-06	45	58	34	19	4.7	0.0 ^c
07-08	71	55	36	15	4.6	0.0 ^c
09-10	40	65	39	24	8.5	3.8
11-12	37	52	41	21	8.1	2.8
13-14	14	51	35	20	7.4	2.2
15-16	20	47	32	15	5.0	1.3
17-18	15	59	39	21	8.1	1.9
19-20	12	69	46	23	8.9	2.6
21-26	22	52	34	18	6.7	2.3
All	276	58	38	19	6.5	1.7

^aGround-contact units only. Includes building with at least one unit with radon levels of 4 pCi/L or more.

^bThese estimates can be thought of as false-negative probabilities.

^cNote that for 90% sampling, all units are tested for buildings with 9 or fewer units.

As shown in Table 2, the overall average false-negative probability was 19% for 50% sampling, 6.5% for 75% sampling, and 1.7% for 90% sampling. The error for an individual building could be as high as the proportion of unsampled units.

Total error

Another way to examine sampling errors is to estimate the probability that a wrong decision is reached

with partial sampling. Table 3 presents the average probability that testing results are all below 4 pCi/L and the building had at least one unit with levels of 4 pCi/L or more. In this analysis, the average total probability is 7.6% for 50% sampling, 2.5% for 75% sampling, and 0.6% for 90% sampling.

A sensitivity analysis (Figure) was conducted to assess how the total error probability would change if the percentage of buildings with any units with radon levels of 4 pCi/L or more were 50% lower or 50%

TABLE 3
Average Probability (%) of an Incorrect Decision With Various Sampling Percentages.

Number of Ground-Contact Units in Building	Building Radon Sampling Protocol				
	Probability (%) When 10% Sampled ^a	Probability (%) When 25% Sampled ^a	Probability (%) When 50% Sampled ^a	Probability (%) When 75% Sampled ^a	Probability (%) When 90% Sampled ^a
05-06	21	13	7.3	1.7	0.0 ^b
07-08	22	14	6.0	1.9	0.0 ^b
09-10	26	15	8.7	3.0	1.3
11-12	19	15	7.6	3.0	1.0
13-14	20	14	8.1	3.0	0.9
15-16	22	15	7.1	2.3	0.6
17-18	30	20	11	4.3	1.0
19-20	33	22	11	4.3	1.2
21-26	34	22	11	3.8	1.2
Total	23	15	7.6	2.5	0.6

^aAverage probability that testing results are all below 4 pCi/L and the building had at least one unit with elevated radon levels.

^bNote that for 90% sampling, all units are tested for buildings with 9 or fewer units.

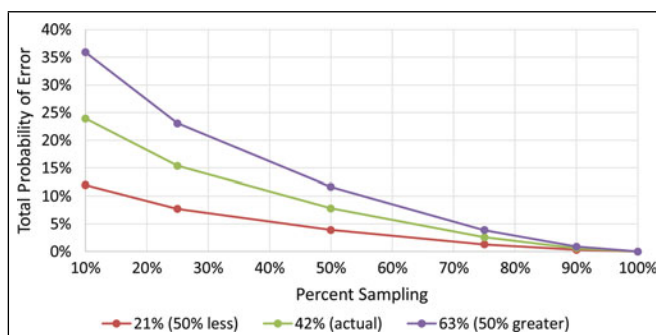


FIGURE Total Error Probability by Percent Sampling and Percentage of Buildings With Any Radon Levels of 4 pCi/L or More (21%, 42%, or 63%). This figure is available in color online (www.JPHMP.com).

higher than the 42% observed. The total error stayed very low for 75% and 90% sampling and increased up to 5% at 40% sampling.

Reliability and measurement error

The data set had 932 units with duplicate radon measurements (ie, 2 radon measurements in the same unit) from 295 buildings on 138 properties. The reliability ratio for replicates within a unit was 0.95, which is very high. The reliability is a function of the total variability in log radon (1.30) and the measurement error variability (or within-unit variability) (0.06). Of the 133 side-by-side duplicate samples with one detector having levels of 4 pCi/L or more, only 16 detectors had the duplicate level of less than 4 pCi/L.

Reliability of sampling within in a building

This model estimated the reliability in sampling of different units within a building. When less than 100% sampling of ground-contact units was conducted, this model showed how sensitive the results were to the selection of units for sampling. Radon measurements from 7892 units in 687 buildings on 152 properties were included. Results found the reliability ratio for different units within a building was 0.73, which shows that sampling within a building was fairly consistent. The reliability is a function of the total variability in log radon (1.37) and the within-building variability (0.37).

Reliability of sampling within a property

This model estimated the reliability in sampling different buildings within a given multifamily property to determine the strength of the association of radon in different buildings on the same property. The model only included properties with more than 1 building sampled and included 7037 radon measurements (units) from 645 buildings on 110 properties. The reliability ratio for different buildings within a property

was 0.65, which shows that sampling results within a property was still fairly consistent and was a reliable predictor about two-thirds of the time. The total variability in log radon is 1.43 and the within-property variability is 0.5. The reliability is a function of the total variability in log radon (1.43) and the within-property variability (0.50).

Discussion

Selection of a testing plan

For multifamily housing, any radon-testing plan must address 3 key factors: health, feasibility, and cost. In some cases, testing less than 100% of units is necessary because it may not be feasible to test all units on all floors. But in the case of testing multifamily buildings for radon, since ground-contact units are much more likely to have elevated radon levels than units on upper floors, standards⁶ require testing of only 10% of units on an upper floor.

The data collected for this study demonstrate that radon measurement professionals are testing 100% of ground-contact units, and it is feasible to do so. Given that it is feasible to test 100% of ground-contact units, what are the benefits and trade-offs of a sampling plan? The main benefit of sampling fewer than all ground-contact dwellings is avoided costs for devices, laboratory analysis, and labor. A low estimate of this savings would be \$50 per dwelling not sampled. However, any decision to use less than 100% sampling will mean that some units with radon levels of 4 pCi/L or more could be missed. Missing units with elevated radon levels means that buildings that should be mitigated will not be, and residents will be exposed to elevated radon levels and incur an increased risk for developing lung cancer.

The cost of a lung cancer case has been estimated in several ways. Mariotto et al¹⁵ estimated the lung cancer prevalence at 457 000 cases in 2020, with each case of medical treatment at a cost of \$68 000 to

\$80 000. Lost earnings for each lung cancer case are \$210 000.¹⁶ As the lifetime risk of lung cancer death for dwellings with an average radon level of 5 pCi/L is approximately 30 out of 1000 residents,¹⁷ and the cost per person with lung cancer is at least \$280 000, the cost per home is at least \$16 800 assuming 2 persons per home. Any dwelling that is missed by less than 100% sampling and is not mitigated has a cost of \$16 800.

Can the savings be so great from testing as to accept this cost? Consider a 90% sampling plan. Because sampling would require rounding up to the next whole integer, 90% sampling in a building with 9 ground-contact units (8.1) would result in all 9 units being tested. In this case, 90% sampling is the same as 100% sampling. For larger buildings with 10 or more ground-contact units, the study data set contained about 5000 ground-contact units in 300 buildings. Sampling 90% would mean 500 units were not tested for a savings of \$25 000 ($10\% \times 5000 \times \50). Table 3 reports that for these 300 buildings, about 1% (3 units) with elevated radon levels would be missed. Therefore, the savings is about \$8333 per unit with elevated radon levels missed by employing a 90% sampling plan, while the cost is more than \$16 800 per unit. Therefore, 100% sampling is an appropriate plan for multifamily radon testing.

Limitations

It was not the intent of this study, nor do the authors suggest, that the radon prevalence found in this study is nationally representative of radon at US multifamily properties. Radon measurements included only ground-contact units of multistory buildings; thus, this study does not represent radon throughout all multifamily buildings but rather the prevalence in the ground-contact units of the multifamily buildings studied.

Conclusion

Analysis of nearly 8000 radon measurements in multifamily buildings quantified the probability of missing a ground-contact unit containing radon using partial testing protocols of 10% to 25% in some federally assisted or insured housing. Based on measurement data for building sizes of 5 to 26 ground-contact units, the confidence that there are no units with radon levels of 4 pCi/L or more, based on various sampling percentages, was determined. For buildings of 5 to 26 ground-contact units, sampling 10% and 25% of ground-contact units failed to identify an average of 47%-69% and 34%-46% of ground-contact units with radon levels of 4 pCi/L or more, respectively.

Implications for Policy & Practice

- Partial sampling will miss radon in untested units.
- Partial sampling will lead to failure to mitigate and cause preventable exposure to high levels of radon.
- The AARST MAMF standard,⁶ which is EPA recommended and adopted in multiple states, requires measurement of each ground-contact unit. In December 2020, HUD's Multifamily Program discarded 25% sampling in favor of full compliance with MAMF.
- This study supports 100% testing of all ground-contact units in multifamily housing.

To achieve 95% confidence that no units in the building have radon levels of 4 pCi/L or more in buildings up to 20 units, 100% testing is required. For the vast majority of multifamily building sizes, all ground-contact units in the buildings should be tested for radon.

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Montgomery County Council

Testimony on behalf of County Executive Marc Elrich on Bill 26-22 Landlord-Tenant Relations – Radon Testing and Mitigation - Required

October 18, 2022

1:30 p.m.

Good afternoon, Council President Alborno and Councilmembers, my name is Aseem Nigam, Director of the Department of Housing and Community Affairs. I am here on behalf of the County Executive in support of Bill 26-22, which prioritizes tenant safety and health by reducing exposure to high radon levels in the rental housing market.

Radon is an odorless invisible radioactive gas that occurs from the decay of uranium and can easily enter homes and buildings through cracks, openings in the foundation and other pathways. The primary health risk associated with chronic indoor radon exposure is an increased lifetime risk of lung cancer. According to U.S. Environmental Protection Agency, long term exposure to radon is the second leading cause of lung cancer and the number one cause among non-smokers. In addition, U.S. EPA studies have identified Montgomery County as a Zone 1 - meaning that it has the highest potential indoor radon levels at or above the EPA's 4.0 action level.

The County Executive supports Bill 26-22 as it prioritizes the health and well-being of Montgomery County tenants, which make up approximately 40% of our community, and provides a reasonable, focused approach to addressing a critically important environmental health issue. The Executive looks forward to working with the sponsor and the Committee on any amendments.

Thank you.

DONOHUE

Integrity and Vision Since 1884

October 12, 2022

Via email

Montgomery County Council
100 Maryland Avenue, 5th Floor
Rockville, MD 20850
Attn: Council President Gabe Albornoz

RE: BILL 26-22

Dear President Albornoz,

Radon exposure is the second-leading cause of lung cancer in the United States and the County's current radon testing requirement for single-family homes upon sale is good, but not enough.

Radon enters through small crack and gaps in concrete floor slabs and masonry walls with direct contact with soil. Every single-family home has concrete floor contact with soil and homes with basements also have wall contact. This bill does nothing to address the asset type most prone to radon. Instead, it adds regulations to an asset type that is least likely to have radon contamination.

This Bill should be substantially modified to:

- Apply to all single-family (including duplex/quad,, etc.) rental homes – homes are most prone to radon gas infiltration.
- Apply to all multi-family units that have direct soil contact (floors or walls) with the earth meaning only ground floor units that do not have parking below them and partially below grade units.

The Bill should not apply to ground floor multifamily units located above structured parking. Parking garages are fully ventilated by code and they cannot possibly contaminate habitable spaces above them. More generally, this Bill should not apply to multifamily buildings with structured parking below.

Thank you in advance for your thoughtful consideration

Sincerely,



Christopher Bruch
President and CEO

7101 Wisconsin Avenue, Suite 700
Bethesda, MD 20814

202.333.0880

Memorandum



October 17, 2022

To: County Council

From: Maryland Chapter of the American Association of Radon Scientists and Technologists (AARST)

Subject: Bill 26-22 Landlord – Tenants Relations – Radon Testing and Mitigation – Required

The MD AARST Chapter is composed of individuals with a wealth of Radon testing and mitigation experience; in Montgomery County, Maryland, and nationwide; as well as participating in professional committees for the development of professional standards for the radon industry: standards development committees including the participation of practitioners, various state regulatory representatives, EPA representatives, and other stakeholder representatives.

The Maryland Chapter of AARST supports Bill 26-22 but with the suggested amendments below:

1) 29-35E. Radon Testing, (a) *Definitions, Mitigation*

Existing: *Mitigation* means measures designed to permanently reduce indoor radon concentrations.

Revised: *Mitigate/Mitigation* means measures designed to permanently reduce indoor radon concentrations. Mitigation shall be conducted in compliance with the most current EPA-recommended standards for the subject building type, and by a certified radon professional.

Explanation: On the U.S. EPA website (<https://www.epa.gov/radon/radon-standards-practice>), current Radon Standards of Practice are referenced and attached which provide detailed standards for conducting mitigation of single-family and multifamily buildings (whether rental or other). By referencing EPA recommended standards, the bill can be simplified, and present or future conflicts (due to various written standards) can be avoided.

2) 29-35E. Radon Testing, (a) *Definitions, Radon test*

Existing: *Radon test* has the same meaning as in Section 40-13C(a).

Revised: *Radon test* has the same meaning as in Section 40-13C(a) with the addition of the following. Testing shall be conducted in compliance with the most current EPA-recommended testing standards for the subject building type, and by a certified radon professional.

Explanation: On the U.S. EPA website (<https://www.epa.gov/radon/radon-standards-practice>), current Radon Standards of Practice are referenced and attached which provide detailed standards for conducting testing of single-family and multifamily buildings (whether categorized as rental or otherwise). By referencing EPA recommended standards, the bill can be simplified, and present or future conflicts can be avoided (due to various written standards).

3) 29-35E. Radon Testing, (b) *Applicability*.

Existing: (b) *Applicability*. This Section applies to any rental housing that has a unit below the third floor of a residential building in:

(1) a single-family home; or



(2) a multifamily dwelling unit.

Revised: (b) *Applicability.* This Section applies to any rental housing that is:

(1) a single-family home; or

(2) a multifamily dwelling unit.

Explanation: Where to test in a single-family and multifamily building does not need to be defined or clarified because testing locations are defined in the standards that are present on the U.S. EPA website (<https://www.epa.gov/radon/radon-standards-practice>). For example, regarding multifamily buildings, there is a detailed explanation of what floors and apartments to test depending on contact with the ground and other building design attributes. By referencing EPA-recommended standards, the bill can be simplified, and present or future conflicts can be avoided (due to various written standards).

4) 29-35E. Radon Testing, (d) *Lease requirements.* (2)

Existing: (2) the test was performed less than three (3) years before the date the lease; and

Revised: (2) the test was performed within the stipulated period in EPA recommended standards; and

Explanation: How recently the test was performed does not need to be specified here because the frequency of testing of buildings (mitigated buildings every 2 years, and un-mitigated buildings every 5 years) is already defined in the EPA recommended testing standards referenced in the updated definition of *Radon test* above. By referencing EPA-recommended standards, the bill can be simplified, and present or future conflicts can be avoided (due to various written standards).

5) 29-35E. Radon Testing, (e) *Testing and notification by existing tenants.*

Existing: (e) *Testing and notification by existing tenants.* An existing tenant may conduct a radon test in the dwelling unit covered by this Section. If the test results indicate that radon hazard is present at a level of 4 pCi/L or higher, the tenant must:

(1) in writing; and

(2) within 14 days of the test results, notify the landlord.

Revised: (e) *Testing and notification by existing tenants.* An existing tenant may conduct a radon test in the dwelling unit covered by this Section. This test is not to be used to meet the required testing in section 29-35E, (c). If the test results indicate that a radon hazard is present at a level of 4 pCi/L or higher, the tenant must:

(1) in writing; and

(2) within 14 days of the test results, notify the landlord.

Explanation: Testing by a tenant is governed by different EPA recommended standards than testing by a professional. The accuracy and precision of the test result are very uncertain since the tester is not trained, and the test is not subject to any quality assurance/control procedures. As such, it is not recommended that the result be used as the sole determinator of whether to mitigate the residence. The test, performed by an untrained person, should not be relied upon to protect the health and safety of others. Since these test results will be confirmed or challenged during a retest by the landlord (whose test shall be conducted by a professional), procedures are also recommended for resolving the dispute between differing test results.



6) 29-35E. Radon Testing, (f) *Mitigation of Radon*, (2)

Existing: (2) within 90 days of confirmed results, mitigate, repair, or alter the premises to reduce the radon level to 2 pCi/L or below.

Revised: (2) within 90 days (short-term testing) or 180 days (long-term testing) of confirmed results, mitigate the premises.

Explanation: If initial test results are equal to or greater than 8.0 pCi/L, EPA recommends short-term follow-up testing and not long-term testing. If initial testing is less than 8.0 pCi/L, retesting can be short- or long-term; and long-term testing does capture a larger percentage of the annual exposure and is a better representation of the annual exposure.

EPA recommends mitigation of the residence if results are equal to or greater than the EPA Action level of 4.0 pCi/L. EPA does not recommend repair or alteration of the premises to reduce radon. Mitigation is defined, with all available options, within the EPA recommended standards. Since these standards are referenced in the definition of mitigation for this bill, there is no need to define or describe mitigation options here.

Mitigation being required to <2.0 pCi/L vs <4.0 pCi/L, from the experience of members of the MD AARST Chapter, is cost-prohibitive to achieve in a small percentage of all mitigation events.

7) 29-35E. Radon Testing

Insert the following section after (f) *Mitigation of Radon*, (2):

Insert: (g) Dispute of testing results – In case of conflicting test results:

- (1) Testing performed in compliance with the EPA-recommended standard, by a radon professional (for hire) shall supersede tests not performed by a radon professional.
- (2) If both tests are performed by radon professionals, long-term testing results shall supersede short-term test results.
- (3) If both tests are of equal weighting per (1) and (2) above, a mutually agreed third-party radon professional shall retest in accordance with EPA-recommended standards.

Explanation: Since there may be a dispute between a tenant's test result and the test result from a landlord or other radon professional, procedures are recommended for resolving the dispute.



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17 October 2022

Dear Montgomery County Council,

My name is Lorin Stieff, and I am the Vice President of Rad Elec, a radon equipment manufacturer based in Frederick. We were founded in Maryland over 30 years ago, and in that time have become one of the major manufacturers for professional-grade radon detection equipment in the United States and around the world.

Rad Elec supports Bill 26-22, although with the following suggested amendments. We recommend that the acceptable mitigation threshold be increased from 2 pCi/L to 4 pCi/L, in order to align itself with the current EPA recommended action limit. In 1986, when the EPA defined this action limit, it recognized that the vast majority of homes can be reduced below this level in a financially feasible manner.

The same cannot always be said for reducing radon concentrations below 2 pCi/L, which may be cost-prohibitive for a sizable percentage of structures.

In rare circumstances it can even be difficult – and expensive – to mitigate below the 4 pCi/L action limit. In such scenarios, we suggest that the Council allow radon testers to measure – and mitigate – according to the structure's Working Levels. Historically, the EPA has defined this exposure limit at 0.02 WL (which is equivalent to 4 pCi/L at a 50% equilibrium ratio of radon gas to its decay products).

Whereas **picrocuries (pCi)** measure radon's rate of decay, **working levels (WL)** measure the concentration of radon's decay products, which are the radioactive elements formed from the decay of radon. This is important because the primary health risk comes not from radon itself, but rather from the radioactive decay of its solid progeny (which readily attach to lung tissue).

When a structure cannot be feasibly reduced below 4 pCi/L, allowing mitigators the option to lower the radon decay products below 0.02 WL will significantly reduce the health risk from ionizing radiation, and provide radon professionals with additional tools to increase public health and wellbeing.

Thank you for your time and consideration.

Best regards,

Lorin Stieff
Vice President
Rad Elec Inc.
(800) 526-5482 / lcstieff@radelec.com



**Statement of the Apartment and Office Building Association on Bill 26-22,
Landlord-Tenant Relations – Radon Testing and Mitigation
October 18, 2022**

The Apartment and Office Building Association of Metropolitan Washington (AOBA) is a non-profit trade association representing more than 133,000 apartment units and over 24 million square feet of office space in suburban Maryland. In Montgomery County, AOBA members own/manage over 60,000 of the [County's estimated 83,769 rental units](#) and 20,000,000 square feet of office space. AOBA submits this statement favorably with amendments to the County Council's enactment of County Bill 26-22.

As drafted, Bill 26-2022 requires housing providers to conduct radon testing in multifamily units before a tenant's occupancy for any rental housing that is a single-family home or multi-dwelling unit. At the time of lease signing, the housing provider must provide education pamphlets related to radon, testing, and mitigation as recommended by the EPA or Department of Environmental Protection (DEP). A housing provider who fails to mitigate the presence of radon may permit and trigger the option for the tenant to terminate the lease without penalty.

AOBA appreciates the bill's sponsor for addressing and listening to the industry's issues with the bill. However, there are still lingering concerns about the implementation of this legislation. Below are friendly amendments that AOBA offers to improve the overall intent of the bill.

Amendments

- Page 2, Line 28, Insert, **“(3) Buildings built before 1952 must conduct radon testing for all units on the ground level or basement unit.”**
- Page 3, Line 35, strike **“Section (1),”** Insert, **“(1) Tenants can access test results via written notice, electronically, or the main leasing office by request.”**
- Page 3, Line 47, Insert, **“Tenants can only test once for radon per lease term.”**
- Page 3, Line 53, Insert, **“(1) Every three years, landlords must conduct radon testing for 20% of units on the ground level or basement unit of a residential building for buildings built since 1952.”**
- Page 4, Line 61, Insert, **“If a tenant fails to comply reasonably with the inspection or treatment requirements described in this subtitle, then the landlord will not be held liable for testing and abatement of the unit.”**
- Page 4, Line 65, Insert, **“(4) apartments equipped with radon mitigation systems are exempted from the testing requirement and will instead disclose the presence of the system to prospective tenants.”**

- Page 4, Line 66, Insert, "**The bill will take effect on October 1, 2023.**"

AOBA members agree that testing for radon and reducing elevated levels of exposure is important. Given the cost and administrative burden of frequent testing, AOBA urges the Council to amend the legislation to be as flexible as possible. Buildings built after 1952, for example, do not require all ground-level units to be tested. Unlike buildings built prior to 1952, these newer buildings are built on a gravel foundation, which causes radon to accumulate in pockets rather than being dispersed throughout the property. Thus, AOBA believes that a random sampling of 20 percent of units every three years is sufficient for determining potential exposure.

In addition, the administrative burden of testing and notifying residents of the results before their lease signing will be significant. This issue will delay the leasing process and hinder prospective residents from moving in. AOBA recommends including a provision that allows residents to access test results electronically or hardcopy by request. This amendment will help streamline the process and lessen the paperwork for staff and new residents.

AOBA supports Greater Capital Area Association of REALTORS (GCARR) language to exempt properties with a radon mitigation system from testing. Properties that have proactively installed these systems should not be required to test more frequently, provided the systems are in good working order. The Association also is supportive of GCARR's proposal to limit the testing that residents may perform during their leasing period. This amendment will prevent the issue of tenants frequently testing for radon and complicates the process for assessment and abatement for housing providers.

The Association encourages an amendment to address residents' refusal to test and enter their dwelling units. If a resident refuses to allow the housing provider to evaluate for radon, the latter will not be subject to any penalties outlined in the bill. Lastly, AOBA recommends inserting language to include an effective date of October 1, 2023. This will give housing providers time to adequately prepare for this new testing requirement.

For these reasons, AOBA respectfully urges a favorable with amendments report on Bill-26-22. Please contact Ryan Washington, Manager of Government Affairs-Maryland, at rwashington@aoba-metro.org or (202) 770-7713 with questions or concerns.

TESTIMONY OF THE GREATER CAPITAL AREA ASSOCIATION OF REALTORS® BEFORE THE MONTGOMERY COUNTY COUNCIL

Support, with Amendments, for Bill 26-22, Radon Testing and Mitigation

October 18, 2022

Good afternoon, members of Council. My name is Villy Iranpur and I am testifying today on behalf of the 11,000 members of the Greater Capital Area Association of REALTORS® (GCAAR). Our association is supportive of Bill 26-22, Radon Testing and Mitigation, with amendments to the bill as introduced.

I would like to start by thanking Councilmember Rice for reaching out to GCAAR while putting this bill together. Any time we as advocates and industry professionals can bring our experience in the marketplace to the table to help the Council with its legislative work, better results are brought to bear.

One of our mission statements as a REALTOR® organization is that we advocate professional and ethical service to the public and members. Promoting and protecting the health and safety of residents our property managers and housing providers is paramount. And we appreciate Councilmember Rice's legacy of ensuring our community is safe from radon in their homes.

We believe there is a path forward on this bill that upholds the importance of providing safe housing while maintaining a fair increase in cost and responsibility on property managers and housing providers.

GCAAR has two suggested amendments to present to the Council on this bill. The first would exempt properties with active radon mitigation systems from further testing. The second would ensure testing does not become a nuisance used against properties.

We also stand with the Apartment and Office Building Association of Metropolitan Washington (AOBA) in their five amendments and ask that you amend the bill as they recommend. Our amendments will be included in the full testimony provided to the Council.

Thank you for your consideration of our Association's perspective. With these suggested amendments included, we believe this legislation will better serve all residents as well as the goal of the bill.

We look forward to our continued work towards bringing safe and reliable housing to everyone in our community.

Recommended Amendments to Bill 26-22, Radon Testing & Mitigation

GCAAR Amendments:

- Page 4, Line 65, Insert, **“(i) Exemptions. Apartments equipped with radon mitigation systems are exempted from the testing requirement and will instead disclose the presence of the system to prospective tenants.”**

Explanation: If a property manager or owner has already installed a system to mitigate radon in a unit, and that system is in good working order, they should not be required to test for that property. Requiring this punishes their proper stewardship of the property and adds to the additional cost they have undertaken to ensure the residence is safe to inhabit.

- Page 3, Line 47, Insert, **“Tenants can only test once for radon per lease term.”**

Explanation: Constant testing, especially when a property manager or owner is asked to repeatedly confirm, can be a nuisance that can add up to real time lost (as well as money paid for tests). GCAAR understands and supports residents wanting to have their safety reassured. Once per term may not be the correct amount, but some limit (perhaps based on testing levels present) would be an appreciated reassurance that this legislation will not open them up to constant resident petition.

AOBA Amendments:

- Page 2, Line 28, Insert, **“(3) Buildings built before 1952 must conduct radon testing for all units on the ground level or basement unit.”**
- Page 3, Line 35, strike Section (1), Insert, **“(1) Tenants can access test results via written notice, electronically, or the main leasing office by request.”**
- Page 3, Line 53, Insert, **“(1) Every three years, landlords must conduct radon testing for 20% of units on the ground level or basement unit of a residential building for buildings built since 1952.”**
- Page 4, Line 61, Insert, **“If a tenant fails to comply reasonably with the inspection or treatment requirements described in this subtitle, then the landlord will not be held liable for testing and abatement of the unit.”**
- Page 4, Line 65, Insert, **“The bill will take effect on October 1, 2023.”**