



**HUD Multifamily Radon Testing and Mitigation Policy  
Frequently Asked Questions  
Property Owners, Mortgagees, Property Managers  
Maintenance Personnel, Assistant Managers, Tenants**

The following information is not intended to supersede existing information as presented by HUD or other authoritative body. It is a brief overview of some pertinent radon testing and mitigation guidance for HUD- financed multifamily dwellings. The radon professional should always seek final guidance from a qualified HUD representative. (For HUD multifamily Hub contact information, see:

[http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/housing/mfh/hsgmfbus/abouthubspcs](http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/mfh/hsgmfbus/abouthubspcs))

**1. What are the mortgage types and the identifying numbers of those types that require radon testing?**

Both Multifamily Accelerated Processing (MAP) and Traditional Application Processing applications for funding will require radon testing and mitigation if elevated levels (4 pCi/L or above) are found.

| <b>Housing Act (Mortgage Type)</b> | <b>Description</b>  |
|------------------------------------|---|
| Section 220                        | New construction or substantial rehabilitation of mixed use projects in urban renewal area  |
| Section 221(d)(4)                  | New construction or substantial rehabilitation of multifamily rental or cooperative housing for moderate-income families, elderly, and the handicapped by profit-motivated sponsors |
| Section 223(f)                     | Purchase or refinance of existing multifamily rental housing that does not require substantial repairs  |
| Section 231                        | Construction and substantial rehabilitation of rental housing for the elderly or disabled   |
| Section 223(a)(7)                  | Refinance of original HUD-insured mortgages. Radon testing is not required, but is encouraged.  |

<http://portal.hud.gov/hudportal/documents/huddoc?id=4430GHS GG.pdf>

**2. How many units comprise a HUD multi-family dwelling?**

A multi-family dwelling is 5 or more units. They are characterized as detached, semidetached, row, walkup, or elevator-type rental or cooperative housing with complete kitchens and baths.

[http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/housing/mfh/progdesc/rentcoopsg221d3n4](http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/mfh/progdesc/rentcoopsg221d3n4)

**3. How do you choose the units to test?**

According to the HUD Radon Policy, a Radon Professional (as defined in IV.A.2.b) is to *supervise* the testing in accordance with the AARST-ANSI Standard with the exception that at least 25% of randomly selected ground level units shall be tested. The professional will identify the ground level units to be tested, and then use accepted processes for random selection of the units to be tested.

**4. Do I have to notify the tenants?**

Issuing appropriate notification to all concerned parties, including tenants, is required by the AARST MAMF, and is specifically required in HUD's policy. Specific information and timing of notices is covered in Sections II and III. Samples of notifications can be found in the AARST MAMF Exhibits 5-9.

A process must be in place before testing begins to ensure implementation of timely and thorough notification. Discussions should be held in advance of the testing dates to clarify the responsibilities of all participants with continued contact to ensure that notification obligations have been performed in a timely fashion. Those activities should be reflected in written agreements with the radon professional as part of the contract and the environmental report submitted with the loan application.

**5. If the state where the property is located has regulations that cover radon testing and mitigation, are we required to follow state standards or the HUD guidance?**

HUD and State requirements must be followed. If there appears to be a conflict between State requirements and HUD requirements, the Lender should consult with HUD early on.

**6. What are the types of tests? What should I be using?**

Radon tests are classified as passive and continuous. Passive tests commonly include charcoal canisters, liquid scintillation devices, electret ion chambers, and alpha track (long term) detectors. Continuous monitors are operated by an electric source and must record and track hourly measurements as well as calculate the average radon during the test period. Some continuous monitors also record other variables such as temperature, barometric pressure, humidity, and tamper indications.

Because of cost considerations, passive devices are usually used for larger multifamily test courses. There are situations where a radon professional may suggest the use of a continuous monitor to help evaluate an unusual radon entry pattern or to evaluate weather patterns during the test.

## **7. What is the cost of the testing?**

The cost of the testing will vary. Measurement professionals should supply details on the costs of the measurement devices, the analysis, and shipping, as well as costs of document preparation, field work, meeting time and any other costs projected to complete the project. Total costs per device should be supplied as well as total cost of the project.

The number of units to be addressed and their proximity to one another, ease of access to the properties, time needed to prepare communication plans and disseminate information, evaluate HVAC systems and other elements that will impact the sampling process will heavily impact costs and cause them to vary widely from project to project.

The HUD MAP Guide gives guidance on estimating costs at Section 5.5, as follows:

A. Method of Estimation. The method should be similar to that used by general contractors. Data should be organized by trade division using the Construction Specification Index (CSI) Format, and adjusted to reflect cost differences due to time, location and price fluctuations. The cost estimate may be prepared using a quantity survey takeoff or a square-foot and per-unit cost approach using established data and making adjustments.

B. Data. The data source used to prepare the cost estimate must be documented. Acceptable cost data may come from completed comparable projects, benchmark amounts taken from actual project costs, and published data from construction cost data publishers.  
<http://portal.hud.gov/hudportal/documents/huddoc?id=4430GHSGG.pdf>

Once costs are estimated, detailed Cost Estimates are required to be submitted to HUD for construction contractors using specific HUD documents. The cost estimate is tabulated on Form HUD-92326, ([http://portal.hud.gov/hudportal/documents/huddoc?id=DOC\\_20661.pdf](http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_20661.pdf)) and totals are reported in Sections G, M, and O of Form HUD-92264 ([http://portal.hud.gov/hudportal/documents/huddoc?id=DOC\\_20643.pdf](http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_20643.pdf)).

Mitigators may find some information on Form HUD-92326 to be relevant to their work, and should employ the Method of Estimation (noted above) as much as possible. Davis-Bacon labor wage rates must be used. (It is the project architect's responsibility to obtain current Davis-Bacon wage rates from HUD. See Section 5.4 of MAP).

<http://portal.hud.gov/hudportal/documents/huddoc?id=4430GHSGG.pdf>

## **8. Can the property staff do the testing themselves?**

HUD requires all radon testing to be "performed under the supervision of a Radon Professional." (See below.) Just as lead, asbestos and other environmental inspections are assigned to third party professionals, mortgage lenders expect the radon testing to be performed by an independent third party.

**9. Where do we find radon professionals? How should I select one?**

The HUD Radon Policy defines a Radon Professional as having certification through:

1. American Association of Radon Scientists and Technologists (AARST) National Radon Proficiency Program (NRPP)  
[www.NRPP.info](http://www.NRPP.info)  
OR  
The National Radon Safety Board (NRSB)  
[www.NRSB.org](http://www.NRSB.org)

AND

2. Certification/license from the state in which the testing or mitigation will be performed if the state has that requirement.

The following states have certification/licensure requirements:

| <b>States with Certification/Licensure Laws</b> |              |
|---|--------------|
| Florida   | Maine        |
| Illinois  | Nebraska     |
| Indiana   | New Jersey   |
| Iowa  | Ohio         |
| Kansas  | Pennsylvania |
| Kentucky  | Rhode Island |
| Virginia  | California   |
| West Virginia                                   |              |

Radon professionals with the appropriate credentials are listed on the individual state radon websites and on the websites of the national certifying organizations.

The process of selecting a radon testing or mitigation professional is the same as choosing any other qualified contractor. The basic credentials are required and available publicly. In addition, some professionals have furthered their preparation for testing or mitigating large buildings through classes and additional training. Professionals should supply information on their additional preparation which can be verified through their professional licensure organizations. All radon testing organizations are required to have and operate under a written Quality Assurance document and perform the stated Quality Control measurements. Stakeholders may wish to view copies of these documents or procure written documentation that the measurement professional is working within these confines.

Testing and mitigating large buildings is significantly more complex than simple residences and employers should look for professionals with additional large building credentialing and experience.

**10. What identification should a radon professional have?**

Professionals should have an identification card listing their certification/licensure number and their classification. These credentials can be checked through the sites noted in “Where do we find professionals?” [www.nrpp.info](http://www.nrpp.info) and [www.nrsb.org](http://www.nrsb.org). Additional large building credentials can also be checked through the credentialing agencies. Experience should be verified through former clients.

**11. What is the testing protocol both initial and post-mitigation, if it’s required? Do upper floors have to be tested? What if a device is missing?**

These protocols are covered at length in the documents HUD refers to in its Mortgagee Letter and Housing Notice. Briefly and most commonly, a short term passive device will be placed in the chosen units and left for a minimum of 48 hours under closed-building conditions. (See “What are closed-building conditions?” for more information.) If an elevated concentration results, the protocol require a follow-up test, either short- or long-term, to corroborate the original data. This is the “Extended Test Protocol.”

A second option is offered in cases where timely results are critical. In this “Time Sensitive” protocol, two short-term devices are deployed next to each other in each chosen location and the results averaged to give the data on which mitigation decisions are based.

HUD requires that at least 25% of randomly selected ground level units be tested for radon, while the AARST-ANSI protocol requires that 100% of units be tested. HUD’s policy is based on mitigation done on a per-building basis, not on a per-unit basis. Stakeholders in the financing project should thoroughly discuss the ramifications of limited testing in any building they are considering purchasing or funding.

If a building must be mitigated, follow-up testing must be conducted to ensure the success of the remedy. The procedure is the same as the initial Extended Protocol test Follow-up testing is required by the standards referenced in HUD’s Radon Policy, and is required specifically in the Policy, and must occur prior to Final Endorsement.

Stringent Quality Assurance/Quality Control is required by the AARST-ANSI standard including documenting and responding to missing devices or other lapses in testing conditions. The professional is required to report missing devices and other lapses. With the limited testing locations of the HUD Policy, loss of data from any one device may severely impact the ability to make appropriate mitigation recommendations for a large portion of a multifamily building.

**12. What are closed-building conditions? What if they’re not met? Can occupants go in and out the door?**

Closed building conditions for short-term testing require all windows and doors in the entire building to be closed for 12 hours before and during the test period, a minimum of 60 hours. Momentary entry and exit is allowed. Heating and cooling systems shall be set to occupied temperatures and settings, and no equipment for exchange of indoor and outdoor air shall be allowed, unless this is a permanent condition of the heating or cooling system. Severe or

unusual weather during the test period may skew the tests and make the results unreliable for making mitigation decisions. Additional conditions are required for new construction. It is clear that planning and communication are required for a successful course of radon testing. Closed-house conditions are discussed at length in the AARST-ANSI Protocol document.

**13. Can we test the soil before I build to see if we need to build with special features?**

Radon entry into a building is, in large part, caused by the “suction” of the building on the soil below. This negative pressure is due, primarily, to warm air rising and pulling air in from outside and from the soil under the building. Thus, testing soil to try to predict a potential radon concentration in a future building will not give good information on whether to install radon protective features.

**14. If a mitigation system is already installed, do I still need to test? Can I just re-test the units that were mitigated?**

A building must be tested if a system is already installed to ensure it is working correctly and continues to reduce radon concentrations to acceptable levels. Post mitigation testing is required by the standards referenced in HUD’s Radon Policy, and is required specifically in the Policy, and must occur prior to Final Endorsement.

**15. What do we do if a result is high? Should we retest? When do I need to mitigate?**

According to the AARST-ANSI Standard, if the Extended Test protocol was employed, a follow-up short term or long-term test should be deployed to corroborate the initial reading. If the Time-Sensitive protocol was used, the average of the duplicate short-term devices can be used to make a mitigation decision. (See AARST-ANSI Standard or “What is the testing protocol”.)

The HUD “threshold for unacceptability” is 4.0 picoCuries per liter (4.0 pCi/L) or higher. This is also the “action level” for the US Environmental Protection Agency.

**16. How do we know it’s a valid test? Are the tests accurate?**

When the devices are used according to the protocol including the manufacturer’s instructions, and the conditions outlined in the AARST-ANSI protocol are followed, these tests will allow a good mitigation decision 94% of the time. When the test results are very close to 4.0 pCi/L, it is more difficult to ensure that the mitigation decision they suggest would be consistent throughout the year.

**17. How do we respond to tenants whose units tested high? Are they safe? Will the test hurt them? Should they see a doctor if their levels are high? Do we have to tell the occupants the results?**

Radon is a Class A carcinogen which means we know it causes cancer in humans. As such, it is a serious health risk and should be addressed quickly. Tenant notification is required by HUD’s Radon Policy, and by the ANSI-AARST Radon Measurement Protocol. All tenants should be given information on radon risks as part of the notification process and should be referred to State or

local radon division or health department officials who can appropriately advise them on their health risk and actions they can take to track their health in the future. The radon report should be made available to tenants, perhaps at a central location or by request.

Tenants should be informed that elevated radon concentrations will be mitigated and the time frame in which that will happen. It is the decision of an individual to seek medical expertise.

The test devices contain common materials such as charcoal, much like barbecue briquettes, or plastic components similar to their food storage containers. Continuous monitors have components similar to cell phones or computers. There is no radon emanating from the devices, no dangerous fumes or other hazardous components. They should be kept out of the reach of children primarily to ensure the test is not compromised.

**18. Will we need to test again in the future? How often? Why would the results be different?**

Radon tests should be performed every few years. However, additional tests are not required by HUD's Radon Policy. As the earth's crust moves, the building settles and changes, and pathways for radon can change. In addition, when heating-ventilating-air conditioning changes are made to the building, the pressure differences that caused the radon to be drawn into the building are likely to change causing changes in the radon concentrations. If additions or major structural changes are made to the building, radon entry can also change, and additional testing may be required in accordance with HUD's environmental review process. Any of these conditions and others we're unaware of may change radon entry into a multifamily building, necessitating re-testing on a regular basis.

**19. Are we required to mitigate the property, the building or the unit and what constitutes each of those?**

HUD's Radon Policy is based on mitigation of the building, in accordance with ASTM E1465 and ASTM E2121.

**20. Can the tester also mitigate? Who can perform the post-mitigation testing?**

ASTM E2121 states that the contractor must take steps to ensure that the system is effective and gives three approaches:

1. Leave a device with the responsible person with written instructions;
2. Hire a certified/licensed, independent tester to perform the test;
3. Accept post-mitigation results from a relocation company's test.

This document should be followed to ensure that radon mitigation, including post-mitigation testing, is performed according to the protocol required by the HUD Radon Policy. Some states have different regulations regarding who can perform post-mitigation testing.

**21. Can I fix my own unit or building?**

HUD requires all radon mitigation to be “performed under the supervision of a Radon Professional.” (See definition of Radon Professional in the HUD notice.) Mitigation of a large building can be extremely complex and should only be performed by a knowledgeable professional. Sophisticated diagnostics, coordination with other building contractors such as HVAC professionals, and a thorough knowledge of many mitigation techniques are necessary for the efficient, cost-effective and safe correction of a radon problem. Since untrained workers may not only make a radon problem worse, but may create structural problems and indoor air quality contamination, such as carbon monoxide, only a certified/licensed and qualified mitigator should perform this work.

**22. What should the system look like? What is the “alarm/manometer” and where should it be installed? Do the systems run all the time? Will the fan be loud?**

The most common radon mitigation system is Active Soil Depressurization (ASD). Plastic piping is inserted through a 5 – 8” hole drilled in the slab, and into a small pit. The piping is run vertically above the roof. A fan is installed on the pipe to pull suction on the pit. The fan runs continuously. In crawl space applications, a membrane is installed to cover the crawl surface and the fan on the piping draws from under it.

The piping and fan can be installed completely inside the building if a chase is available, or it may be run on the exterior of the building. The fan must be installed in an unconditioned space that is not below a conditioned space, or it can be installed outside. Most properly installed fans are not loud and can be positioned away from sensitive populations. Fans installed on more difficult mitigations may be noisier than others and the qualified professional should take occupant needs into consideration in the installation design.

The “alarm/manometer” indicates whether the system is continuing to work and should be installed in a location where maintenance personnel or those responsible for the property can readily see it.

**23. How do we know if the system is working?**

The “alarm/manometer” should be readily visible and checked on a regular basis to ensure the system is still working as designed to reduce radon risk.

**24. How long do systems last? Are they permanent?**

The Active Soil Depressurization and Sub-membrane systems should be designed and installed to be a 50-year fix. They should be considered a permanent addition to the structure with the exception that the fan(s) will need to be replaced when they no longer perform as specified.

Other mitigations, such as pressurization and ventilation will need regular monitoring and maintenance to ensure they continue to function as designed.



**25. If you drill a hole in my floor, will it affect my foundation?**

The holes drilled in the slab for an Active Soil Depressurization system typically do not exceed 8 inches. Mitigators are responsible for designing systems that will not adversely affect the structural integrity of the building.

**26. Who pays for the mitigation fan electricity? What will be the cost of ownership? (Lifetime operation and maintenance)**

The landlord of the building will be responsible for the cost of operating and maintaining the system. Properly installed systems are considered 50-year repairs with the fan being the component needing replacement more frequently: commonly between 10 and 15 years of operation.

Properly sized and installed fans use energy comparable to a light bulb, costing between \$50 and \$150 per year. Fans for more difficult mitigations may cost more. The fans cost from \$125 to \$500 with those replacement costs amortized over 10 to 15 years.

**27. Do I need an operations and maintenance (O&M) plan for the mitigation system?**

The information needed for operation and maintenance of the radon mitigation system should be included in the general operations and maintenance plan for the building.

**28. What are my responsibilities as a:**

**Purchaser/owner:**

- Ensure the radon contractors hired meet the required qualifications of certified and, if state regulated, licensed;
- Supply necessary paperwork to enable radon contractors to direct sampling and mitigation such as floor plans, HVAC drawings, add-ons, and the like;
- Collaborate with contractors to ensure proper tenant notification;
- Facilitate tenant education on the testing and mitigation process and familiarization with the measurement devices and mitigation system;
- Authorize and enable entry to the necessary units;
- Serve as liaison between tenants, property managers and contractors.

**Mortgagee:**

- Ensure all forms are delivered to and collected from contractors;
- Submit all necessary information and reports to mortgagor;
- Inform contractors of any changes that may impact the measurement or mitigation process.

**Property manager:**

- Supply necessary paperwork to enable radon contractors to direct sampling and mitigation such as floor plans, HVAC drawings, add-ons, and the like;
- Collaborate with contractors to ensure proper tenant notification;
- Facilitate tenant education on the testing and mitigation process and familiarization with the measurement devices and mitigation system;

- Enable entry to the necessary units;
- Serve as liaison between tenants, property managers and contractors.

**Maintenance person:**

- Enable entry to the necessary units;
- Serve as liaison between tenants, property managers and contractors

**Tenant:**

- Comply with closed-building conditions and other requests for access and cooperation before and during the process

**29. What documents are required for the project? Floor plans? Results? Project & clearance documents?**

- HUD documents for environmental reports
- Proposals/bids
- Contracts
- Floor plans
- HVAC drawings
- Add-ons
- Non-interference agreements
- Tenant notification documents
- Notification signage
- Educational materials on radon
- Reports

**30. Why does HUD require this testing and why now? What are the health risks of radon?**

Recently HUD's Office of Healthy Homes and Lead Hazard Control (OHHLHC) participated on a team of Federal Agency representative that drafted the Federal Radon Action Plan (the Plan) (see: [http://www.epa.gov/radon/action\\_plan.html](http://www.epa.gov/radon/action_plan.html)), led by the US Environmental Protection Agency (EPA). One of the primary goals of the plan is the incorporation of radon testing and mitigation into HUD programs.

Testing for radon is the only way to know whether there is a radon problem on a site. Radon is the number one cause of lung cancer in non-smokers and the seventh (7<sup>th</sup>) ranked cause of all cancers in the United States. It is estimated to kill one person every 25 minutes. Roughly 21,000 people die from radon caused lung cancer in this country every year.

**31. What is the typical decision-making timeline for the whole transaction?**

The amount of time needed to review and accept an application for HUD Multifamily insurance varies depending on the type of transaction and the complexity of the proposal. Generally, HUD seeks to meet the following processing timelines:

- 30 days for a 223(a)(7) application
- 45 days for a 223(f) application
- 60 days for a new construction or substantial rehabilitation application

**33. Where can I get the multi-family standards and guidelines? Where can I get more information and other contacts?**

<http://www.aarst.org/bookstore.shtml>

<http://www.astm.org/Standards/E2121.htm>

<http://www.astm.org/Standards/E1465>

More information on radon and radon professionals can be found at:

<http://www.aarst.org>

<http://www.nrpp.info>

<http://www.nrsb.org>

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