

Radon Testing Protocols for Iowa Licensed Childcare Centers

This guide summarizes the requirements found in the ANSI/AARST MALB-2014 with 1/2021 Revisions, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings* applicable to those persons performing radon testing in childcare center buildings which they own or occupy. This guide is not intended to cover every aspect of testing as outlined in the standard. A complete copy of the above standard can be viewed free of charge at <https://standards.aarst.org>. It is highly recommended you read through the standard before beginning any testing.

OBTAINING TEST KITS OR TESTING SERVICES

- **Where do I get a test kit if I want to do the testing myself?**

Test kits can be purchased, depending on number needed, from some local health departments, big box home improvement stores (Lowe's, Home Depot, Menards, etc.), hardware stores or by calling the Iowa Radon Hotline at 1-800-383-5994 or online at www.lung.org/radon (both facilitated by the American lung Association under contract by the Iowa HHS). Test kits can also be purchased directly from an Iowa HHS certified Radon Laboratory:

COMPANY	WEBSITE	PHONE	TYPES*
Air Chek, Inc. (AKA Spruce Environmental)	www.radon.com	(800) 247-2435	ST
Eurofins Environment Testing Radon LLC (formerly Alpha Energy Labs)	www.aelabs.com	(800) 324-5928	ST, LT
AccuStar Labs	www.accustarlabs.com	(800) 523-4964	ST, LT
EMSL Analytical, Inc.	www.emsl.com	(800) 220-3675	ST
PriorityLab LLC	www.prioritylab.com	(833) 450-2946	ST
PRO-LAB, Inc.	www.prolabinc.com	(800) 427-0550	ST, LT
RAdata,LLC	www.radata.com	(800) 447-2366	ST
Radiation Safety Services, Inc. (RSSI)	www.rssi.us	(800) 762-7774	LT
Radon Test Corp of America (RTCA)	www.rtca.com	(800) 457-2366	ST
TRC Environmental Corp.	www.trcsolutions.com	(860) 298-6392	ST
Radonova	www.radonova.com	(800) 528-8327	LT

*ST = Short-term test LT= Long-term test

- **How do I find a professional to perform the testing?**

Anyone hired to perform radon testing must be a certified radon measurement specialist through the Iowa HHS radon program. An alphabetical list and interactive map of Iowa HHS certified radon measurement specialist can be found at:

- [Measurement Specialist List](#)
- [Measurement Specialist Map](#)

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INITIAL TESTING

1. Which rooms in a childcare center must be tested for radon?

A measurement shall be conducted in all program rooms or spaces the children will use that:

- a) have floors or walls in contact with the ground, and
- b) are closest to ground over untested ground-contact locations, to include the lowest level of the building over a crawl space, utility tunnel, parking garage or other non-habitable space that is in contact with ground.

Test the lowest level program room or space the children will use (except bathrooms, laundry and kitchen) regardless of contact with the soil.

Note: If any program room or space extends beyond the tested lower level and that space is in contact with the soil, additional testing of this space is required as well. Example: split levels or partial basements that are not as large as the lower tested area.

2. Which areas do NOT need to be tested for radon?

Test locations shall not include hallways, closets and bathroom or shower areas unless they are open to other rooms that are occupied for other purposes.

3. If the entire basement is used as a storage area and is not used by children, does it need to be tested?

No, however, all program rooms or spaces the children will use above the basement must be tested.

4. What about buildings with crawlspaces?

The crawlspace itself does not need to be tested; however, all program rooms or spaces the children will use above the crawlspace must be tested.

5. What about the upper floors?

On each upper floor, a measurement shall be conducted in at least one and not less than 10% of all rooms that are occupied or intended to be occupied.

6. If a program area has tested below the threshold and is not in contact with the soil, is it necessary to test the space directly above that area?

No.

7. How many tests should be used in each program area?

Each room must be tested with a separate device. If a room is over 2000 ft², additional devices will need to be used. If two devices are used, divide the room in half, and place each device in the center of each half.

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8. Where should the device be placed in a room?

- at least twenty (20) inches above the floor
- at least one (1) foot from exterior walls
- 4 inches (10 cm) from other test detectors and objects or surfaces that are above or to the side of the detector.
- at least three (3) feet from doors or windows or other openings to the outdoors.
- Do NOT move the radon test device after it has been placed.
- all radon tests must remain in place for a minimum of 48 hours.
- keep doors and windows closed except for normal entering and exiting.
- be sure to follow the conditions and instructions on each test kit.

DO NOT place devices in closets, cabinets, drawers, sumps, crawl spaces or nooks in the building foundation, near heat sources, such as on appliances, radiators, fireplaces or in direct sunlight, near drafts caused by fans or heating and air conditioning vents or within enclosed areas of high air velocity such as mechanical/furnace closets, or within enclosed areas that accumulate high humidity, such as bathrooms, laundry rooms and kitchens that are isolated by partitions and doors from adjoining less humid areas.

9. When should testing be conducted?

Testing should be conducted during weekdays when heating, ventilation, and air conditioning (HVAC) systems are operating normally. This approach has the important advantage of measuring radon levels under typical weekday conditions for that childcare center and also eliminates the burden of weekend testing and non-routine adjustments to the HVAC systems.

Winter months, November through April, are the best time to test in Iowa because closed-building conditions can be easily maintained, windows and exterior doors are more likely to be closed and the heating system is more likely to be operating, resulting in the reduced intake of outside air.

Testing should not be conducted during unusual weather events. Severe rainstorms, snowstorms, and periods of unusually high winds or drops in barometric pressure can affect the level of radon in a building and skew test results. Check upcoming weather and try to plan around such events or testing may need to be redone.

TEST RESULTS

1. What if the test is above 4.0 pCi/L (picocuries per liter)?

If a childcare center has a test reading above 4.0 from a short-term test-kit, it is recommended to conduct additional testing.

Options for retesting:

- A. If the result of the initial test is 4.0-7.9 pCi/L, it is recommended to conduct a long-term test using a testing device such as an alpha track detector.
- B. If the result of the initial test is greater than or equal to 8.0 pCi/L, it is recommended to conduct a follow-up short-term test.

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If the center has multiple classrooms and only a few results are above 4.0 pCi/L, only those rooms with radon levels above 4.0 pCi/L need to be re-tested.

NOTE: The decision to mitigate should *not* be made based on one elevated result. Follow-up testing should always be done prior to installing a mitigation system.

If testing indicates radon levels at 4 pCi/L or greater fix the building. The higher the radon level, the more quickly action should be taken to reduce it.

2. What other conditions require re-testing?

Radon testing should also be conducted when any of the following circumstances occur:

- ✓ a new addition is constructed or alterations for building reconfiguration or rehabilitation occur;
- ✓ a ground contact area not previously tested is occupied, or a building is newly occupied;
- ✓ heating or cooling systems are significantly altered;
- ✓ ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures;
- ✓ significant openings to soil occur due to:
 - groundwater or slab surface water control systems that are altered or added (e.g., sumps, perimeter drain tile, etc.) or,
 - natural settlement causing major cracks to develop; or
- ✓ earthquakes or construction blasting, fracking or formation of sink holes nearby.

MITIGATION

Per Iowa HHS Administrative Rules, only licensed radon mitigation specialists are permitted to install radon mitigation systems. For a listing of credentialed radon mitigation specialists, consult the list or map located on the HHS Radon Program website: www.hhs.iowa.gov/radiological-health/radon scroll down and click to the word **Fix**, scroll down to the find a specialist section where you will find an alphabetical list of department credentialed radon mitigation specialist and a link to an interactive map of those individuals.

The mitigator is required to provide an *Operation, Maintenance, and Monitoring (OM&M)* plan that explains the system, system components, warranties and troubleshooting procedures to the building owner/occupant upon completion.

1. Is there a method to make sure that the system is functioning properly?

Yes.

- a) Post-Mitigation Testing Protocol - One or more short-term test devices shall be deployed at each test location to evaluate the effectiveness of the mitigation efforts. Post mitigation testing shall be conducted no sooner than 24 hours and within 30 days after activation of a mitigation system fan or completion of other mitigation efforts.
- a) Ongoing monitoring - Each mitigation system is equipped typically with a manometer, see below, which shows the level of suction created by the fan on the system. A properly functioning fan will show an uneven level of liquid on the two sides, showing that there is a vacuum in the pipe and the fan is running. Other forms of monitoring devices may be present such as a gauge, audible alarm or wi-fi enabled notification device which should be explained in the OM&M manual.

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Photo of a U-tube manometer with uneven liquid levels indicating system is operating.

2. What if the system does not appear to be working?

Review the trouble shooting guide in the provided OM&M manual. If that does not correct the issue, contact the system installer. Their phone contact information should be on the sticker attached to the pipe near the manometer and in the OM&M manual.

3. If a childcare center already has a mitigation system installed and it is working properly, is testing necessary?

Yes. To ensure that the system is functioning properly and that levels remain below 4.0 pCi/L, testing should be conducted at least every 2 years at the same locations as the original tests. In addition.

Radon testing should also be conducted when any of the following circumstances occur:

- ✓ a new addition is constructed or alterations for building reconfiguration or rehabilitation occur;
- ✓ a ground contact area not previously tested is occupied, or a building is newly occupied;
- ✓ heating or cooling systems are significantly altered;
- ✓ ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures;
- ✓ significant openings to soil occur due to:
 - groundwater or slab surface water control systems that are altered or added (e.g., sumps, perimeter drain tile, etc.) or,
 - natural settlement causing major cracks to develop;
- ✓ earthquakes or construction blasting, fracking or formation of sink holes nearby; or
- ✓ the mitigation system is altered, modified or repaired.

OTHER RESOURCES

Any questions about radon, testing or mitigation can be directed to the Iowa Radon Awareness Program at 515-281-4928 or email to randy.lane@hhs.iowa.gov

- Iowa HHS Child Care Licensing Information: <http://ccmis.dhs.state.ia.us/providerportal/LicensedProviderInfo.aspx>
- US Environmental Protection Agency: www.epa.gov/radon
- American Lung Association: www.lung.org/radon
- Iowa HHS Radon Program: <http://hhs.iowa.gov/radiological-health/radon>

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Testing Flow Chart – taken from ANSI/AARST MALB-2014 with 1/2021 Revisions, Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings

