Radon in Child Care Centers and Non-Residential Buildings

Protect yourself, staff, and the children in your care by testing for radon and reducing levels if it is high.

What is radon?

Radon is a colorless and odorless radioactive gas. It comes from the soil and is naturally occurring. It enters buildings through openings in the foundation (like cracks and exposed soil). Any building can have high radon, regardless of age, construction methods, or soil conditions.

Radon is a health concern because it causes lung cancer. The risk for lung cancer increases with higher levels of radon and longer periods of exposure. Radon is the leading cause of lung cancer for people that never smoked, and it increases risk in smokers. In the United States, it is estimated that radon causes about 21,000 lung cancer deaths a year. Children may be at increased risk because of their different lung shapes and sizes and faster breathing rates.

The US Environmental Protection Agency (EPA) recommends taking action to reduce radon if the radon level is at or above 4 picocuries per liter (pCi/L). In Minnesota:

- Average indoor levels are about three times greater than the national average.
- About 16% of public schools that have tested had at least one room that tested high.

How do you test for radon in a center or non-residential building?

Centers and non-residential special family child care programs (aka community-based family child care[1]) have more factors to consider when testing, because they may have many rooms, multiple foundations, more complex mechanical systems, and changing occupancy conditions. Hire a licensed radon professional to do the testing, to ensure accurate and complete testing. Test at least every 5 years, and test sooner, if there are changes that can affect radon exposure or a radon system is installed.

Short-term tests (2-5 days) are typically used. During radon testing, keep exterior windows and doors closed (except normal entry/exit). Conduct testing on days when the child care is operating. If this isn't possible, test on days when the heating, ventilation, and air conditioning system is operating as if the space is occupied. The professional will test all occupied and intended-to-be occupied rooms in contact with the ground, 10% of upper floor rooms, and possibly other rooms. They will also do quality control tests to check the accuracy of the test kits.

If the result from this initial test is 2.0 to 3.9 pCi/L, consider follow-up testing. Also consider testing in the winter if the initial test was low and done outside the heating season.

If any room has a test result at or above 4 pCi/L, conduct follow-up testing as soon as possible (or you could proceed to radon reduction). A professional can use a continuous radon monitor that tracks hourly levels, to determine if elevated levels are present during occupied times. Ventilation systems may cause levels to be

[1] Special family child care aka community based child care is referenced in the family child care draft 1: Draft Revised Family Child Care Licensing Standards (245J)

high overnight and low during the day when the building is occupied. If levels are low during child care operating hours, then mitigation is not needed.

How do you reduce radon levels?

Hire a licensed radon mitigation professional to reduce radon. Radon reduction may involve installing a venting pipe and fan to pull air from the soil, which stops radon from entering the building. In commercial buildings, other mitigation methods may be used, such as mechanical equipment to dilute or pressurize the indoor air or soil.

The goal of a radon mitigation system is to reduce the indoor radon levels to below the action level of 4.0 pCi/L. Many systems reduce concentrations to below 2.0 pCi/L, so consider mitigation when levels are between 2 and 3.9 pCi/L. After a mitigation system is installed, test within 30 days to verify radon reduction. Retest about every 2 years, or sooner if significant changes occur that could affect radon levels, to verify low radon levels (such as significant renovations; alterations to heating, ventilation, or cooling; or openings to soil).

Resources

- MDH maintains lists of licensed radon professionals (https://www.health.state.mn.us/communities/environment/air/radon/findprof.htm).
- MDH conducts free inspections of recently installed radon mitigation systems.
- Contact MDH Indoor Air Unit to request presentations for centers about radon.
- For more information, visit MDH radon (mn.gov/radon).

Questions about the child care regulation modernization projects should be directed MN Department of Human Services (https://mn.gov/dhs/partners-and-providers/licensing/child-care-and-early-education/child-care-regulation-modernization.jsp). Family child care operating in homes should review the fact sheet: ‘Radon in Family Childcare Operating in Homes’.

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To obtain this information in a different format, call: 651-201-4933