

Testing trends for radon in indoor air in public schools

DATA BRIEF – FALL 2024

Key messages:

- Fewer than half of Minnesota public schools were tested for radon from 2018 to 2022.
- Testing was even less likely for school districts that serve more low-income families and receive less school funding for facilities projects.
- More awareness and funding for radon testing are needed to increase testing and make testing more equitable across the state.

Radon is a public health issue in Minnesota

Radon is the second leading cause of lung cancer. Minnesota’s geology causes radon – a colorless, odorless radioactive gas – to be naturally present in the ground in some areas. It can enter any building and result in high radon levels in the indoors.

In Minnesota, radon is a widespread public health issue. Two out of five Minnesota homes tested have high radon levels.¹ **The only way to measure the radon risk is to test the school.** If there are high levels of radon, a mitigation system or heating, ventilation or air conditioning repairs can reduce radon exposures for students and school staff.

Children are uniquely vulnerable to radon and spend much of their time in the school environment

- Compared to adults, children breathe in twice the amount of radon, due to their small lungs and higher respiratory rate.² During the school year, children spend a lot of their time at school.
- Schools are not required to test, but if they do, they must follow the state testing plan and report results to Minnesota Department of Health (MDH) and the school board meeting. The MDH Indoor Air program can provide guidance for schools that want to test.



¹ MN Public Health Data Access Portal. Minnesota Department of Health. Available: <https://data.web.health.state.mn.us/web/mndata/radon>

² What are the Potential Health Effects from Exposure to Increased Radon Levels? Agency for Toxic Substances and Disease Registry. Available: https://www.atsdr.cdc.gov/csem/radon/health_effects.html

Data & Analysis Methods



Two sources of radon testing data were included in this analysis: tests reported to MDH by schools and tests conducted by licensed professionals. For this analysis, we included traditional K-12 public schools from charters, independent school districts, and Minneapolis and South Saint Paul special districts, for a total of 501 districts. Non-public schools, including tribal schools, were excluded.

- Radon test locations were matched to public school buildings.³ We analyzed testing data to identify schools and school districts that conducted tests over a five-year period from 2018 to 2022.
- For each school district, we calculated the **percent of schools that had been tested** within the district during this time period. For analysis, school district percent tested was grouped by county, district poverty levels, and facilities funding (see below).
- **Geographic patterns** in school testing were analyzed by combining school districts to show rates for each county. Because radon tests are considered private data and some school districts are small, counties were the best way to display testing rates.⁴
- **Inequities** in radon testing were examined by looking at the percentage of students in a school district were eligible for Free and Reduced Priced Lunch (FRPL) in 2022 as an approximate measure for higher **concentrations of lower-income households in the school district**.
- **School funding** for health and safety projects is administered through the Long-Term Facilities Maintenance Program (LTFM) of the Minnesota Department of Education.⁵ LTFM funding is based on the number of students, school building square footage, and other factors, so funding amounts can vary substantially between school districts. The funding can be used for radon testing in school facilities if the district chooses to test. For this analysis, we used dollars per square foot that school districts receive under the LTFM to see if there was a relationship between school funding for health and safety projects and radon testing. Charter schools were excluded from this part of the analysis due to differences in maintenance funding allocation and use.
- **Elevated radon levels** were assessed for schools that were tested. Districts were flagged that had any schools with tests showing elevated radon levels above the Environmental Protection Agency (EPA) action level of 4 picocuries per liter air (pCi/L). However, because testing rates were relatively low and unevenly distributed, we were not able to analyze geographic patterns or socio-economic inequities in elevated radon levels.

³ MDE Organization Reference Glossary. Minnesota Department of Education. Available: https://public.education.mn.gov/MdeOrgView/search/tagged/MDEORG_DISTRICT_SCHOOL

⁴ In cases where districts cross county lines, data for the entire district were added the county that contained the center-point of the district.

⁵ Minnesota Department of Education Long-Term Facilities Maintenance Program: <https://education.mn.gov/MDE/dse/schfin/fac/ltfm/>. Schools qualifying for LTFM revenue are funded by a mixture of state aid, levies, and bonds.

Findings

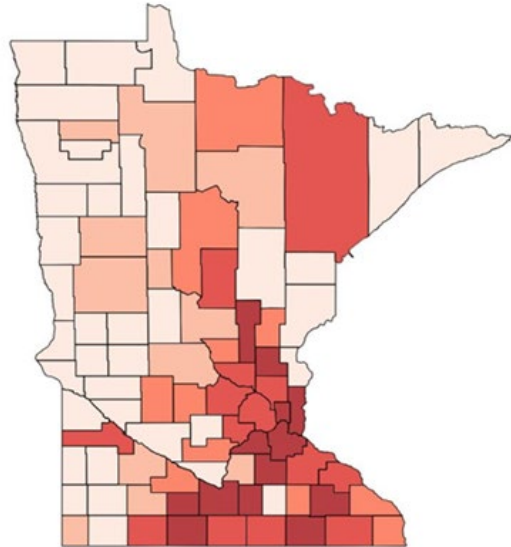
Fewer than half of public schools tested for radon

- **Fewer than half (39%)** of schools⁶ had at least one room tested for radon. Charter schools had much lower testing (1.5%) than independent districts (43%).
- **A quarter (25%)** of school districts had one or more schools tested for radon.

Public school radon testing is not evenly distributed across Minnesota

- Radon tests are considered private data.⁷ To map these data without revealing any specific school’s testing information, we combined school districts to display by county. If you are curious about radon testing for your school or district, please reach out to your local school board.
- There were 37 counties, mostly in western Minnesota, that had zero school districts that tested for radon.
- Counties in the metro and southeastern Minnesota had a higher percentage of school districts that tested for radon.

Percent of schools tested in each county
 □ No testing □ 1-22.1% □ 22.2-33.2% □ 33.3-52.0% □ 52.1-76.9%



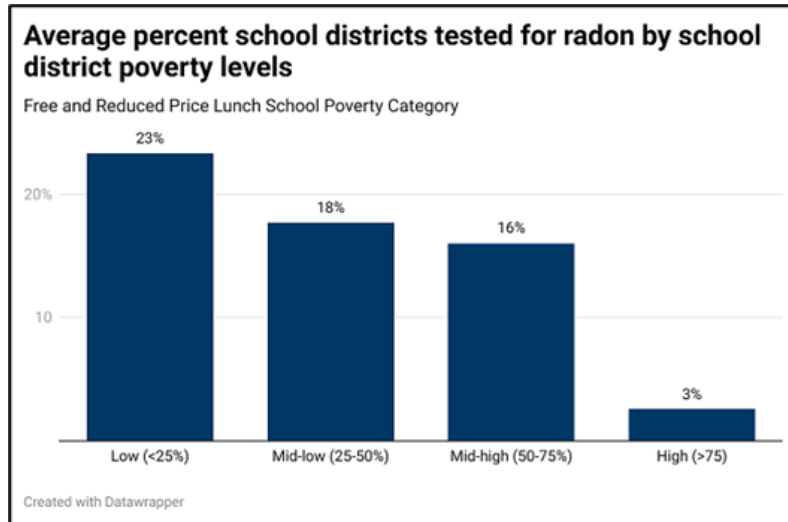
Map data: Radon school test data from 2018-2022 Source: Minnesota Department of Health

⁶ In cases of multiple schools located at the same address, we were unable to distinguish in which school the radon test occurred, so the tests were assigned to only one of them. This data limitations does not impact the school district-level percent.

⁷Under statute 13.3805 subd.5: “Data maintained by the Department of Health that identify the address of a radon testing or mitigation site,...are private data on individual or nonpublic data.”

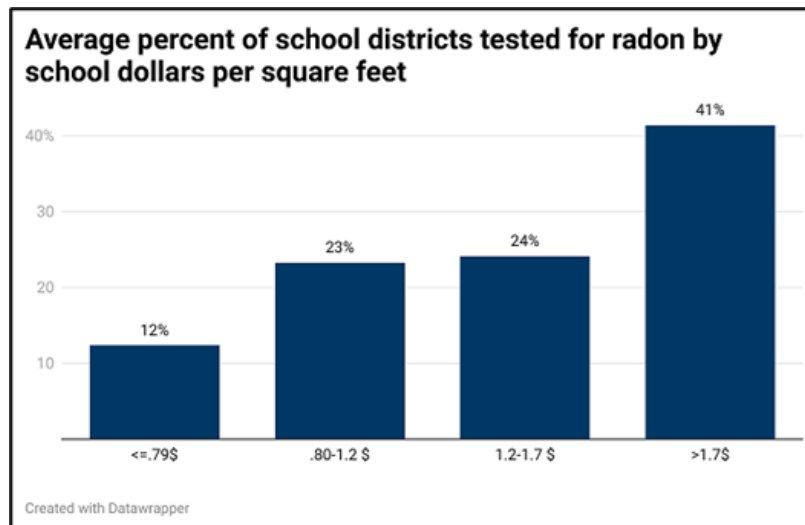
Public school districts with a higher proportion of low-income students were less likely to test for radon

- School districts with the most students eligible for the Free and Reduced-Price Lunch (FRPL) program tested an average of **20%** fewer schools in the district for radon than school districts with the fewest students eligible for FRPL. Charters proportionally had more students who qualified for FRPL than independent schools.



Public school districts with less funding for facilities were less likely to test for radon

- School districts in the highest funding category had an average of **29%** more schools per district tested for radon than the lowest funding category.



Despite low testing rates, radon levels above the action level were detected

- **Nearly half (49%)** of school districts that did test had at least one elevated test.
- Of schools that were tested, **16%, (n=130)** had elevated radon above the EPA action level in at least one room.
- We did not have enough elevated tests to evaluate associations with geographic or socio-economic risk factors.
- We suspected that southern and western Minnesota regions with known geologic risk for radon – or higher risk potential – might have higher rates of testing and higher risk of elevated levels, but overall testing was so sparse that we could not assess this association.



What is MDH doing about radon exposure in schools?

- Provide guidance and trainings to public schools.
- License, educate, inspect, and regulate radon professionals.
- Maintain a list of licensed radon testing and mitigation professionals and have negotiated discounted test kit prices for schools and other public entities.

Learn more about radon in Minnesota

- Information on radon in schools: <https://www.health.state.mn.us/communities/environment/air/radon/radonschool.html>
- Radon disparities maps: <https://arcg.is/CzzSG>
- MN Public Health Data Access portal: health.mn.gov/radondata
- For more information, email: health.indoorair@state.mn.us

Minnesota Department of Health | Indoor Air Unit | 651-201-4618
Dan.Tranter@state.mn.us
www.health.state.mn.us

09/19/2024 | To obtain this information in a different format, call: 651-201-4618.

INDOOR RADON IN PUBLIC SCHOOLS

Table 1: Percent of school districts tested in each county

County	Percent of school districts tested in each county
Aitkin	0
Anoka	48.2
Becker	10
Beltrami	11.1
Benton	25
Big Stone	0
Blue Earth	55.6
Brown	30
Carlton	0
Carver	51.9
Cass	23.1
Chippewa	0
Chisago	0
Clay	0
Clearwater	0
Cook	0
Cottonwood	14.3
Crow Wing	40
Dakota	66.7
Dodge	25
Douglas	0
Faribault	40
Fillmore	36.4
Freeborn	40
Goodhue	36.8
Grant	0

INDOOR RADON IN PUBLIC SCHOOLS

County	Percent of school districts tested in each county
Hennepin	51.6
Houston	25
Hubbard	0
Isanti	69.2
Itasca	12.5
Jackson	33.3
Kanabec	25
Kandiyohi	30
Kittson	0
Koochiching	25
Lac qui Parle	0
Lake	0
Lake of the Woods	0
Le Sueur	21.4
Lincoln	0
Lyon	0
Mahnomen	0
Marshall	0
Martin	54.5
McLeod	0
Meeker	22.2
Mille Lacs	72.7
Morrison	6.7
Mower	60
Murray	0
Nicollet	0
Nobles	0
Norman	0

INDOOR RADON IN PUBLIC SCHOOLS

County	Percent of school districts tested in each county
Olmsted	75.6
Otter Tail	5
Pennington	20
Pine	0
Pipestone	0
Polk	0
Pope	0
Ramsey	52.1
Red Lake	0
Redwood	10
Renville	0
Rice	76.5
Rock	20
Roseau	0
Scott	54.8
Sherburne	40
Sibley	30
St. Louis	33.9
Stearns	21.3
Steele	0
Stevens	0
Swift	0
Todd	0
Traverse	0
Wabasha	33.3
Wadena	11.1
Waseca	55.6
Washington	76.9

INDOOR RADON IN PUBLIC SCHOOLS

County	Percent of school districts tested in each county
Watonwan	71.4
Wilkin	0
Winona	26.7
Wright	46
Yellow Medicine	33.3