

HEALTH

Colorado's radon mitigation assistance program has become more popular

About one in every two tests conducted statewide show radon levels exceed EPA health limits. Radon kills more than 500 annually in Colorado.



Jennifer Oldham

3:45 AM MDT on Oct 13, 2023



Terry Kerwin of Protect Environmental stands next to a radon mitigation system outside a home in Golden on Sept. 11, 2023. (Joe Mahoney, Special to The Colorado Trust)

A Golden family lived in their foothills home for 20 years before they discovered they were inhaling indoor air with twice the federally recommended limit of a

cancer-causing odorless, colorless and tasteless gas.

That gas, radon, moved from soil through cracks in the basement into the two-story house and was measured at 7.8 picocuries per liter (pCi/L), about two times the 4 pCi/L action level set by the U.S. Environmental Protection Agency (EPA). Higher levels like this are found in one out of every two homes in Colorado, according to the Colorado Department of Public Health & Environment (CDPHE).

Today, the family can breathe a little easier after a company — paid by a **state program** that provides money to low-income homeowners to mitigate the gas — drilled a 5-inch opening through a concrete floor in one of the home's closets in September. A technician then dug out dirt to create a void under the closet, positioned a pipe in the concrete hole, and ran it out through a brick wall and alongside the house to the roof. A fan was installed in the pipe system to suck the gas out from under the residence and vent it into the air.

While pleased to have the radon mitigation system now installed, “I don't know what the impact of 20 years of breathing the air in our house will be,” said Mark, 74, who asked that his last name not be used for privacy reasons.

“Hopefully I don't have anything, or my wife doesn't have anything, or our children don't have anything,” he added, as he stood in the shade of a silver maple tree in his backyard on a hot August day.

Scientific studies show the naturally occurring invisible, radioactive gas is the leading cause of lung cancer in nonsmokers, and the second-leading cause for the population as a whole.

Exposure to radon is directly responsible for **21,000** lives lost each year in the U.S. and more than **500** deaths annually in Colorado. Most of the state falls within an area **designated by the EPA** with the highest potential for elevated indoor radon levels due to the breakdown of uranium in soil.

About one in every two tests that are conducted statewide show that radon levels exceed EPA health limits, according to a **dashboard** maintained by CDPHE.

Once homeowners test and find radon levels that exceed those recommended by health officials, the only way to get rid of it is to install a system like the new one venting the gas out from below the Golden family's basement. Such units **typically cost between \$1,500 and \$3,500** depending on the home's configuration—a price tag out of reach for some people living in Colorado.

Mark's family and others relied on a (literal and figurative) groundbreaking Colorado program that seeks to raise awareness among residents about the need for radon testing and funds mitigation systems for low-income families whose homes test above the EPA radon limit.

The General Assembly allocated \$1.1 million to the **Low Income Radon Mitigation Assistance** program for the 2023-24 fiscal year after the five-year-old effort ran out of money six months into its last fiscal year. The funding shortfall and increased demand forced CDPHE to start a waiting list.

“It’s really sad when you can get someone to test their home and then they can’t afford to fix it,” said Chrystine Kelley, radon program manager for CDPHE, who pioneered the state’s radon education efforts 20 years ago. “Every year we see the number of folks who need assistance going up.”

The EPA cited the program in a **2019 report** of an example of state actions to reduce and mitigate radon exposure. Since 2018, the program has paid for radon mitigation systems in 401 homes statewide, helping about 950 residents, Kelley said, adding that in the 2022-23 fiscal year alone it helped 97 households. As many as 300 families qualify a year to receive assistance and the new funding, which will be ongoing, will allow officials to broaden the program to serve them.

The popular program is one way the state, legislators and municipalities are working to raise awareness that uranium is **ubiquitous** throughout Colorado. The element produces radon when it breaks down in soil, rocks and water. When residents breathe in the atom-size radioactive particles, lung cancer can result after years of sustained exposure.

“Any home can have radon, whether the property is old or new, or homes that are well sealed, or drafty,” testified Bryan Coy, owner of 5280 Radon Mitigation, at a state Senate Local Government and Housing Committee hearing in April.

“Homes with or without basements,” he added, “there’s no way to know if a home has radon without testing.”

Geographic disparities were evident in a 2022 American Lung Association **survey** that found among counties with at least 10 reported radon tests, the highest average radon concentration was observed in Hinsdale County, with an estimated level of 53.8 pCi/L, or about 13.5 times the EPA threshold. The lowest mean ratio, on the other hand, was found in Conejos County, just two counties southeast of Hinsdale, at 2.7 pCi/L.

Coy spoke in favor of a **law** signed by Colorado Gov. Jared Polis on June 5 that requires realtors and landlords to provide prospective buyers and tenants with written warnings about radon and the need for testing, as well as the history of the radon concentrations, testing and mitigation on the property. The law went into effect Aug. 7.

“Far too many Coloradans are still suffering and dying from this public health risk we can prevent,” said State Senator Faith Winter, who sponsored the measure, in the April committee hearing. “We have more work to do.” Colorado is (now) among nine states that require these disclosures, she testified.

Municipalities are also trying to help protect residents from radon exposure. About **42 cities and 19 counties**, including among the state’s most populous, require builders to install mitigation systems in new construction. Fort Collins is the only municipality as of Aug. 9 to mandate **radon-resistant construction** in new multifamily buildings. Radon-resistant features include a 4-inch layer of gravel below the home’s concrete slab, plastic sheeting over the gravel, a vent pipe, and sealing and caulking all openings in the foundation, according to the EPA.

Municipal public health departments, many using grants provided by state health officials, are also working to educate residents about the invisible radioactive gas. In Boulder, employees used a CDPHE grant to educate people during “radon awareness month” in January and to provide radon test kits at libraries, said Patty Dooley-Strappelli, an environmental health specialist at Boulder County Public Health. The city and county’s program has been cited by the American Lung Association as a **model nationwide**.

“If people are moving from other parts of the country, and that happens a lot in Colorado, from areas where radon is not as prevalent, they may have no idea it’s here,” she said.

Radon professionals agreed with Dooley-Strappelli, saying in some cases, they have tested homes only after residents found out they had lung cancer likely due to radon, and discovered levels many times the EPA limit.

“I went into many homes personally where they didn’t understand what radon was and I was there to test because now they have lung cancer,” said Terry Kerwin, director of market development at Protect Environmental, a national radon mitigation

 **READ MORE** _____

Colorado State University’s hurricane forecasting team includes student who flew into a storm

company. “They never smoked, so their doctors told them to test for radon.”

Physicians also cautioned that residents cannot rely on health care providers to recommend health screenings because of radon exposure prior to being diagnosed with lung cancer. Health experts emphasize that there are no safe levels of radon in a home.

“The vast majority of primary care physicians will not ask their patients, ‘Have you had your house tested for radon?’” testified Pierre Onda, MD, MPH, a retired internal medicine physician, in favor of the real estate radon disclosure bill at the committee hearing in April.

Onda’s wife, Heidi, who never smoked, was diagnosed with stage III lung cancer in October 2018. After the couple’s son suggested they test their home for radon, an over-the-counter kit registered radioactive gas levels at twice the EPA threshold. The couple founded the **White Ribbon Project** to raise awareness about lung cancer—the **leading cancer killer** for men and women.

In Colorado, only 5% of those at high risk were screened, lower than the national rate of 6%, according to a **2022 report** from the American Lung Association. (The high-risk category was defined in the study as those between ages 50 and 80 who smoked a pack of cigarettes a day for 20 years, or two packs a day for 10 years.) The study found the rate of new cases in the state was above average, as was the survival rate and early diagnosis and surgical treatment categories.

In Golden, Kerwin, whose company completed the radon mitigation system at Mark’s home with financial help from the state’s low-income radon assistance program, reminded Mark that it’s important to retest for the radioactive gas every two years.

“We have different weather patterns,” said Kerwin. “This year it’s super wet, next year it could be super dry. That could open up new areas geographically under the ground, which could create new pathways for radon into your home.”

4:06 AM MDT on Oct 13, 2023

How should Colorado measure the impact of oil and gas? “There has to be a point where the glass is full.”

3:27 AM MDT on Oct 13, 2023

Colorado is peddling \$2.5 million to communities launching their own e-bike rebates

3:08 AM MDT on Oct 13, 2023

Mark agreed that future testing would be useful. He and his wife decided to do the initial test after she did some research on radon and how prevalent it was in their community.

“We found that my neighbor across the street had had his house mitigated,” Mark recalled. “It generated a dialogue in our area.”

*Freelance reporter Jennifer Oldham wrote this story for The Colorado Trust, a philanthropic foundation that works on health equity issues statewide and also funds a reporting position at The Colorado Sun. **It appeared at collective.coloradotrust.org on Jan. 12, 2023,** and can be read in Spanish at collective.coloradotrust.org/es.*