



Dustin Wallis, a 39-year-old nonsmoker, receives an infusion to treat stage 4 lung cancer at Utah Cancer Specialists in South Salt Lake on Monday, Dec. 2, 2019. Kristin Murphy, Deseret News

# The radioactive killer

*Utah has the lowest smoking rate in the nation, yet lung cancer kills more people than any other cancer. What's going on?*

By Sara Israelsen-Hartley - Jan. 29, 2020

---

*Editor's note: This investigative report was produced with support from the University of Southern California Annenberg Center for Health Journalism's National Fellowship.*

**USC** Annenberg  
*Center for Health Journalism*

SALT LAKE CITY — It's a warm November afternoon in Cottonwood Heights, a suburb of Salt Lake City, and the leaves are piling up in Dustin and Emily Wallis' backyard, but Dustin isn't raking.

There's no time for that, or energy. Dustin is in his living room, thinking about the tumors in his brain.

Just a little over a month ago, Dustin went to the neurologist for an MRI and hopefully some answers as to why he'd been experiencing debilitating migraines and shoulder pain for months.

He didn't come home that night. Instead, the 39-year-old father of two was sent to the hospital and prepped for brain surgery. There were two tumors in his brain, a large one and a smaller one, a tumor in his shoulder and a tumor on his lung.

Doctors were cautious to not use the word “cancer” until they had more information, but Dustin and Emily knew it was coming before they actually heard the diagnosis: Stage 4 non-small cell squamous cell carcinoma — terminal lung cancer.

The horribleness of cancer is that while so many people get it, doctors don’t always know why. Factors include everything from genetics to obesity.

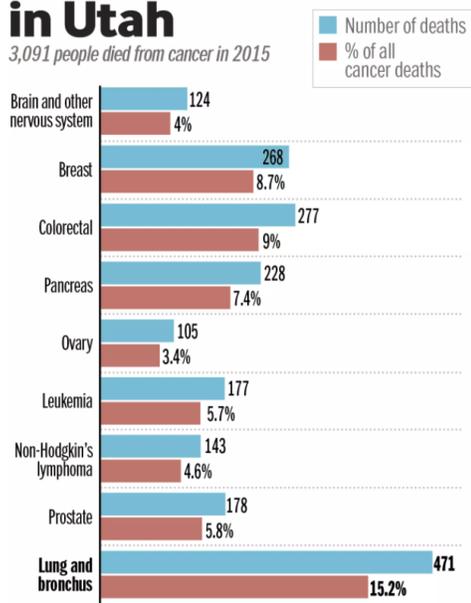
Yet lung cancer isn’t so mysterious. Most of the time — between 80% and 90% — it’s caused by smoking. For the remaining 10% to 20% of cases, the culprit is more complicated. Secondhand smoke, air pollution, asbestos and exposure to chemicals are all factors.

But the second-leading cause of lung cancer, according to the EPA, is something called radon — an odorless, invisible gas. It’s the largest single exposure to natural radiation any of us will face.

In Utah alone, 1 in 3 homes, or nearly 320,000 households, have dangerous levels of radon.

## Cancer deaths in Utah

3,091 people died from cancer in 2015



SOURCE: Utah Cancer Registry, “Cancer in Utah Incidence and Mortality Trends 2006-2015”

Deseret News

Dustin never smoked, or lived in a home with smokers. He will probably never know exactly what caused his cancer, but today he wonders if his diagnosis is somehow related to radon. He grew up in Vernal, Utah, in one of the state’s seven high-risk counties for potentially elevated indoor radon levels.

Radon may be one of the deadliest killers in Utah, and one of the most ignored.

It might also be the answer to a question that has long puzzled doctors and patients: why is lung cancer the leading cause of cancer deaths in a state where 90% of people don’t smoke?

### Understanding the enemy

Radon is a quiet hazard.

Unlike asbestos or diesel, it’s natural, produced as uranium decays in the soil, meaning there’s no company to blame. There’s no smell to drive quick action, like what accompanies a natural gas leak. And unlike carbon monoxide, it will take 20 years to kill you.

It’s “a classic case of a hazard where there’s very, very little outrage factor,” says Daniel Tranter, supervisor of the indoor air unit at the Minnesota Department of Health. “It has all the hallmarks of a risk that’s going to be perceived as low, compared to other things.”

Yet, therein lies the danger. As radon gas bubbles up from uranium in the soil, it dissipates to near harmless levels in the outdoor environment. But when radon finds its way through cracks in foundations and settles in basements and buildings with less air circulation, it begins to accumulate. Radon can also be found in water, most often in private wells.

Radon is measured in picocuries per liter in the US, and in 1992, the EPA set an indoor action level of 4 pCi/L, based on “technology and cost.” However, because there is “no known safe level of exposure to radon,” the EPA recommends that families consider fixing their homes if levels are between 2 and 4.

When inhaled, radon continues its own decay process in the lungs, sending off alpha particles with enough energy to damage lung cells by knocking electrons out of atoms and ionizing them. Once ionized, some cells may die, while the body may start repairing others.

Yet if too much damage happens at once, or for an extended period of time, the cells may not be repaired correctly, leading to broken cells — the most basic definition of cancer, says Dr. Wallace Akerley, a medical oncologist at the University of Utah’s School of Medicine and director of the Lung Cancer Center at Huntsman Cancer Institute.

“It’s really important to understand that radon is really radiation,” says Akerley. “Everyone has a great fear of radiation and they’re really worried about it, but they’re missing the point about radon.”

We’re exposed to radiation every day in small amounts, through radio waves or microwaves or cellphone signals, but these sources are non-ionizing, meaning they don’t damage our cells.

Stronger forms of radiation, such as X-rays, CT scans, or radon gas, are ionizing radiation — meaning any exposure causes cell damage.

Unlike lab rats — which scientists can show get lung cancer when exposed to radon and its radioactive daughters — we don’t live in a lab, meaning it’s nearly impossible to blame radon as the sole cause of non-smoking lung cancer.

While doctors do know that small-cell lung cancer is caused by smoking, anything non-small cell is likely a mash-up of several factors that may work together to increase the risk.

That also explains why radon is so dangerous for smokers, because tobacco and radon work synergistically to dramatically increase the risk of lung cancer.

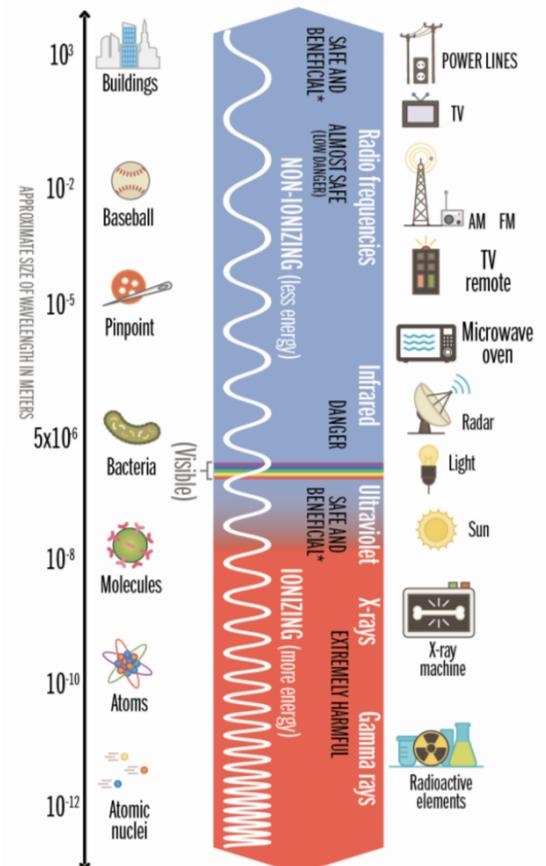
However, this damage still takes decades to manifest, making researchers especially concerned about children’s exposure to radiation.

“Kids are fundamentally sensitive to this,” and young growing cells in the lab exposed to radiation are “way worse off” than nongrowing cells, says Dr. Aaron Goodarzi, a professor and radiation biologist at the University of Calgary who studies DNA damage after radiation exposure, as well as the founder of Evict Radon, a non-profit initiative to understand and solve Canada’s worsening radon gas problem.

Not only is the risk for DNA replication error much higher in rapidly dividing cells, but exposure at a young age could mean cancer in the prime of life, not the end.

Despite that worrisome potential, few, if any, middle-age Utahns will get checked for lung cancer, as there are no screenings for nonsmokers. That means if a cancer does develop, someone may not discover it until stage 4, when it has metastasized to other parts of their body and by then, the odds of survival plummet.

## Range of electromagnetic radiation



\* In appropriate dosage  
SOURCE: Deseret News research

IMAGES: Shutterstock  
Deseret News

More than half of people with lung cancer will die within one year of their diagnosis, and the five-year survival rate for lung cancer is 18.6% — far lower than the nearly 90% survival rate for breast cancer, according to the American Lung Association.

“Radon is the most important naturally occurring, preventable cause of cancer,” says Akerley, who works at the Lung Cancer Center at Huntsman Cancer Institute, where one-third of lung cancer patients are nonsmokers.

He says many of his patients not only feel shame and embarrassment with a nonsmoking lung cancer diagnosis, but also a sense of betrayal.

“I’ve had people horrified, saying ‘what kind of a government do we have here if they’re not letting us know?’” Akerley says. “They assume these houses are protected and if there was radiation in the house that the government would have protected them, and it just doesn’t.”



Estimated new cases in 2019	<b>228,150</b>
Percent of all new cancer cases	<b>12.9%</b>
Estimated deaths in 2019	<b>142,670</b>
Percent of all cancer deaths	<b>23.5%</b>
Percent surviving 5 years (2009-2015)	<b>19.4%</b>
Percent of Americans who will be diagnosed with lung and bronchus cancer at some point in their lifetime	<b>6.3%</b>
Number of Americans living with lung and bronchus cancer in 2016	<b>538,243</b>

SOURCE: National Cancer Institute

Deseret News

### Lack of action

Utah has no laws or regulations for radon testing.

Instead, the state has passed one watered-down resolution that established January as radon awareness month, yet asked landlords, builders, bankers, community groups, colleges, doctors and media outlets to educate the public, while urging Utahns to take steps to protect themselves.

There’s one line about radon in the building code, and legislators have approved a few bills that funded radon awareness campaigns but generally maintain a hands-off approach in favor of personal responsibility — despite overwhelming public ignorance about the topic.

Nearly half the state doesn’t know that lung cancer is a consequence of radon exposure, and 80% of Utahns haven’t tested their home for radon, according to a 2013 Health Department survey. When asked why not, 35% of people said they’d never thought about it.

“The balance in Utah is challenging,” said Aaron Osmond, a former Utah state senator who sponsored a 2014 bill that got \$25,000 for radon education and awareness. (He asked for \$100,000.) “We are very conservative ... but there are times when government does need to step in and provide clear protections. That is the purpose and role of government — to protect the citizens.”

Though radon is listed in our state’s cancer plan, aside from the work of the state radon project coordinator, Eleanor Divver, (whose radon position is part-time) and a handful of citizen advocates, cancer experts and county health departments, little is being done.

“We’ve tried to take steps that we feel have been helpful,” said Rep. Keven Stratton, who has been a co-sponsor on the few radon-related bills. “Now having said that, if you take the first step and that doesn’t get it done, then you try to take another step.”

In the meantime, Utah remains virtually lawless as it relates to a known carcinogen. That means radon tests aren’t required when buying or selling a home here. It means no one is checking your child’s day care or school classroom for the cancerous gas.

And while thousands of new homes springing up along the Wasatch Front could be built in ways to reduce the exposure risk, it's optional and unchecked.

### Why all this matters

The days following Dustin's diagnosis are a blur.

Before October, Dustin and Emily had devoted all their time and emotional energy into managing changes at Dustin's work and planning to grow their family.

Today, everything is cancer. There will be no more babies.

Whether the family of four gets two more years together or 20, it will "never be enough," says Emily.

The Wallises will likely never know exactly what caused Dustin's cancer, but they wish they had known about radon before now. Before cancer.

When they bought their home 10 years ago, the realtor mentioned they probably didn't need to test for radon since their home didn't have a basement. They wish they had. After testing recently, their levels came back at 2.9. But there's no time for wishing.

Their schedule is full of immunotherapy and radiation treatments for Dustin, fitting a radon mitigation system into their budget and keeping everyday life as normal as possible for their young children.

During my visit, we talk in the living room over the chirps of 2-year-old Annabelle and 5-year-old James who are reading books on their mom's lap and at her feet.

Both Emily and Dustin are calm, but their smiles are heavy with worry.

At one point in the conversation, James pipes up, "Is Dad going to die?"

"Everybody dies," Emily responds gently.

"But is Daddy going to die?" James insists with the curiosity of a preschooler who has been forced to confront the idea of death too early.

Emily pauses only slightly, "We don't think so," she says simply.



Dustin Wallis, a nonsmoker who has stage 4 lung cancer, plays with his children Annabelle and James at home in Cottonwood Heights, Utah, on Tuesday, Dec. 3, 2019. *Kristin Murphy, Deseret News*

*Note: Dustin Wallis died on May 27, 2021, at the age of 40.*



Eleanor Divver, radon project manager for the Utah Department of Environmental Quality, holds a favorite illustration of human lungs outside her offices in Salt Lake City on Monday, Dec. 16, 2019. *Steve Griffin, Deseret News*

# Lethal and lawless

*How Utah's hands-off approach to radon is putting people at risk*

By Sara Israelsen-Hartley - Jan. 29, 2020

---

*Editor's note: This investigative report was produced with support from the University of Southern California Annenberg Center for Health Journalism's National Fellowship..*

**USC** Annenberg  
*Center for Health Journalism*

SALT LAKE CITY — In a small cubicle on the fourth floor of a beige government building, seven TRAX stops west of downtown, one woman is on a mission to save lungs.

She wants every Utahn to know what radon is, how dangerous it can be, and what they can do about it.

But the first and biggest hurdle is navigating her own lawless state.

Utah has no meaningful regulations for the carcinogenic gas that's produced as uranium breaks down in the soil, then seeps into basements and ground-level floors, posing a health hazard to anyone breathing it.

Yet Eleanor Divver, Utah's radon project coordinator, has seen states like Minnesota, Illinois and Maine pass laws that are making a difference. These states and others have created policies that impact residents at crucial junctures like new home construction, home sales and school classrooms — potentially saving lives.

But here in Utah, Divver can point out a string of gaps in the system — holes that keep families at risk.

### Building out the enemy

Today, for usually less than \$2,000, certified radon professionals can get most houses to a safer radon level by sealing cracks in the foundation and adding a ventilation system.

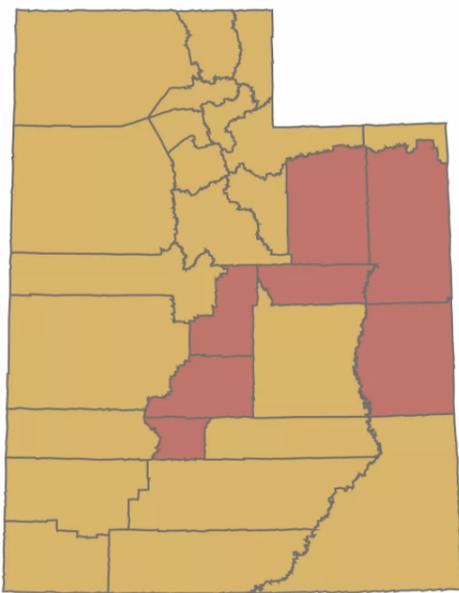
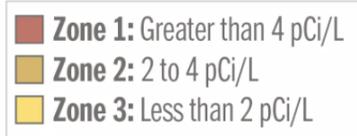
But it's highly recommended and cheaper — around \$400-\$800 — to build homes in ways that prevent radon accumulation in the first place.

It requires builders to take a few extra steps during initial construction to “rough out” a ventilation system to help radon escape through the roof, not pool in the basement. Active systems contain a fan that runs 24 hours a day, while passive systems rely on natural air flow, but can be updated with a fan if needed.

Connecticut, Illinois, Minnesota are the only states with statewide requirements for radon-resistant new construction or RRNC.

## Radon zones

*Utah counties and their potential for average indoor radon levels:*



SOURCE: EPA.gov

Deseret News

A handful of states including New Jersey, Michigan, Oregon and Iowa require builders to build radon-resistant, but only in certain cities or counties, some designated by the EPA as potential high-risk zones for elevated indoor radon levels — of which Utah has seven. The rest of Utah is zone 2, or moderate potential risk.

Ross Ford, executive officer of the Utah Home Builders Association, said he knows some Utah builders install passive systems proactively, but couldn't specify exactly who, as it's not something the state or the association tracks, though he admitted it would be a good idea.

There are a few companies building RRNC:

- \* Knight West Construction in Orem mitigates for radon because it's part of “building green.”
- \* Blackdog Builders, a custom home builder in Park City, says almost no buyers turn down their offer of a radon system installed as part of a new build or a major renovation project.
- \* D.R. Horton, one of the top three homebuilders in the state based on number of homes built, began installing active mitigation systems in 2003 after learning about the health risks of radon exposure.
- \* McArthur Homes has been installing passive systems for several years to proactively address a radon problem it was seeing in some of its finished homes.

Ivory Homes, the largest builder in the state, said its employees talk with homebuyers during the contract process about radon and what it is, but don't automatically put in a passive system, leaving that to buyers' choice.

While some builders may rough out the systems correctly, certified radon mitigator and radon educator John Seidel said he encounters 60 to 70 new Utah homes each year where the new-construction work was done incorrectly — requiring a costly overhaul before the radon system could be activated, or even an entirely new system.

Seidel would love Utah’s code changed back to what it was pre-2017 — when radon-resistant new construction systems had to be installed by certified radon professionals, not just general contractors — but short of that, he’d like a state inspection process for RRNC to mirror what’s done for electrical work or plumbing.

Michael Siler, president and CEO for the Utah Radon Coalition, wants to go even further, requiring a state inspection of any radon system, whether it’s in a new build or an existing home.

In Maine, anyone who works in the radon industry is required to be licensed by and submit their testing data to the state, as well as take continuing education courses, said Jon Dyer, Maine’s radon coordinator. A yearly fee for radon professionals, ranging from \$75-\$150, helps in a small way to fund the state’s radon program, and Dyer also follows up with any mitigation system complaints to protect homeowners.

However, some Utahns worry another inspection will slow down the homebuilding process and dissuade builders from altruistically building RRNC.

“We shouldn’t make it onerous or difficult for those who want to build a better home; don’t give them a reason to not do it,” says Ron McArthur, president of McArthur Homes.

He believes in the importance of passive systems, but knows that builders’ budgets are tight, and every dollar spent “kicks someone out of the ability to buy a home.”

When McArthur started more than 25 years ago, he could get a family into a home for less than \$100,000. Today, he can’t even buy a lot for \$100,000 and can barely get families into a townhome for less than \$300,000 along the Wasatch front.

For him, getting families into a safe, warm place to live takes precedence over secondary concerns about a gas that may or may not be a problem for them.

### **Silence during sales**

Experts agree that buying a home is another great time to talk about radon.

Seven years ago, Minnesota passed a law requiring that home sellers provide buyers with a state-authored radon warning statement, as well as information about any radon tests done on the property. They didn’t require that people test their homes — just talk about radon. Since the law passed, the number of mitigation systems installed each year has jumped from around 1,000 to more than 4,000, says Daniel Tranter with the Minnesota Department of Health.



Eleanor Divver, state radon project coordinator in Utah, teaches a radon for the real estate professional course at the Salt Lake Board of Realtors in Sandy on Friday, Oct. 25, 2019. *Kristin Murphy, Deseret News*



The Deseret News surveyed Utah’s 41 school districts, asking superintendents, maintenance facility managers and building supervisors about their radon awareness and testing.

**We found:**

- \* Out of 41 districts, 18 said they had tested for radon, while 23 hadn’t or weren’t sure.
- \* Of the 18 districts who said they had tested, only 4 districts were testing according to recommendations from EPA and the American Association of Radon Scientists and Technologists — meaning they had tested every classroom in every building within the last five years, or they test every classroom on an ongoing, rotating basis. Testing every classroom is important because levels can vary within a building.
- \* A few districts were aware of radon and had voluntarily taken steps to test, but had tested only a few buildings, or only a few classrooms, or placed test kits in incorrect locations such as boiler rooms or closets.
- \* In Utah’s seven high-risk counties, the school districts either hadn’t tested (seven) or hadn’t tested correctly (one).
- \* Very few districts knew that if high radon levels were found in their schools, most situations could be remedied by adjusting HVAC systems to increase the air flow.

None of this means schools are purposely ignoring radon. In fact, when we asked districts why they hadn’t tested, 10 said they didn’t believe radon was an issue facing their district. A significant number were unsure how to test and where to start. Many were simply unaware of radon.

“The No. 1 hurdle we have with radon is the same hurdle that I have with everything in my job — communication, just making people aware,” said Cade Douglas, superintendent of the Sevier School District, about three hours south of Salt Lake.

Following the survey, the Deseret News partnered with Divver to work with districts like Douglas’ that were curious about the radon testing process.

We tested elementary schools in the Morgan, Sevier and South Sanpete school districts following AARST protocol: testing every classroom and area where students might spend significant amounts of time.

Out of 108 test kits across three schools, nearly all results came in below 2 picocuries per liter, with five tests coming in above 2, the highest at 2.6 — something to retest and monitor, but still below the 4 picocuries action level recommended by the EPA.

While no significant HVAC adjusting was needed, administrators said they appreciated the opportunity to learn about radon and share information with staff and parents.

After our conversation, Douglas said he went out and purchased a test kit for his own home.

Canyons School District, on the east side of the Salt Lake Valley, has been testing consistently for the last 10 years, because it’s the “right thing to do,” said Kevin Ray, risk management coordinator for the district.

## Radon testing IN UTAH SCHOOLS

### School districts that are testing according to AARST protocol

Every building, every classroom at least every five years

Beaver	Davis
Canyons	Tooele

### School districts that are testing/ have tested but not according to AARST protocol

Not every building, not every classroom, older than five years and/or test kits placed incorrectly

Box Elder	Park City
Emery	Provo
Granite	Salt Lake City*
Iron	South Summit
Jordan*	Uintah
Nebo	Wasatch
North Summit	Washington

\*Districts that have reached out to the Utah Department of Environmental Quality with questions regarding testing after being asked about radon by the Deseret News



### School districts that have not tested for radon

Alpine^	Murray
Cache	North Sanpete
Carbon	Ogden
Daggett	Piute
Duchesne	Rich
Garfield	San Juan
Grand	Sevier**
Juab	South Sanpete**
Kane	Tintic
Logan	Wayne
Millard	Weber
Morgan**	

^Refused to answer our survey

\*\*Districts that allowed the Deseret News and DEQ to come out and test an elementary school to demonstrate the process

SOURCE: Deseret News research

Deseret News

The district has built in \$7,000 annually to cover test kits for its 45 buildings, testing rotating classrooms each year. When areas have come back high, Ray has adjusted the HVAC system and then retested — with only a slight bump in electricity costs.

Currently, there is no funding, training or education for radon testing in Utah schools.

Other states have solved the problem by providing mini grants, like in New Jersey, where its Department of Environmental Protection, Radon Section, provides up to \$2,000 to help schools with radon testing — even though testing is not required by state law.

Oregon and Illinois both require testing of schools — Illinois every five years, and Oregon every 10, plus a plan for how to share the result data. Illinois offers online training for school employees who can become certified to test, thus avoiding the cost of hiring a radon professional, and the Oregon Health Authority created its own series of resources including training for school officials, letters to parents and the media as well as testing plans that can be adapted by any school — even those in another state, said Curtis Cude, radon awareness program manager at Oregon Health Authority.

The Utah PTA has been concerned about radon since 1998, when it drafted a resolution that resolved to inform parents about testing, encourage all districts to have buildings checked for radon and push for radon-resistant new construction in future school buildings.

Despite being updated in 2014, the resolution has remained fairly unused, overshadowed by other, louder education issues, said Cheryl Phipps, who drafted the resolution as a then-member of the health commission for the Utah state PTA.

Utah not only lacks funding and inertia for school testing, it lacks accountability. There's currently no database on districts' testing status — other than the list the Deseret News compiled.

However, each year, the Utah Division of Risk Management administers an online self-inspection survey that all of the buildings insured by the state are expected to complete, said Brian Nelson, division director.

There are no radon-related questions on the survey, but after being asked by the Deseret News about radon awareness in the state, Nelson said he would be willing to “augment” the survey to add a question about whether a radon test has been conducted for a specific building or school.

“It will clearly take time to do that,” he said, “but it doesn't mean we don't get started, and I think this is a good start.”



Deseret News special projects reporter Sara Israelsen-Hartley puts a radon test kit in a classroom in Salina Elementary School in Salina on Tuesday, Oct. 8, 2019. *Kristin Murphy, Deseret News.*



Clouds spew from a cooling tower at PECO's nuclear generating station in Limerick, Pa., in this Feb. 14, 1997, file photo. *George Widman, Associated Press*

# From deadly mines to dangerous bedrooms

*How researchers discovered radon's toxic trail*

By Sara Israelsen-Hartley - Jan. 29, 2020

---

*Editor's note: This investigative report was produced with support from the University of Southern California Annenberg Center for Health Journalism's National Fellowship.*

SALT LAKE CITY — Hundreds of years ago, at the base of the Erzgebirge Mountains between Saxony and Bohemia, 14th century miners carved their way into the boggy, tree-covered hillsides, pulling out rocks laced with shimmering ribbons of tin and silver.

Small mining towns had flourished for hundreds of years, but when rich veins were discovered on the craggy now-Czech Republic side, miners and their families flocked to the area, quickly turning the new town of Joachimsthal into one of Europe's largest mining centers. Before marching into the darkness of the hollowed-out earth, workers called to each other: "Ich wünsche Dir Glück, tu einen neuen Gang auf" — a wish to open a new lode, and return safely after the day's work.

For several decades the luck held and silver poured out of the mines, filling Saxony's coffers with silver coins and guaranteeing a livelihood for strong, young workers. Yet after years in the mines, which were now producing a strange black mineral, workers began dying. Many were convinced the sickness afflicting miners' lungs came from evil mountain spirits.

Women began knitting lace veils for workers to wear while underground, but despite their efforts, wives often buried multiple husbands.

By the late 1500s, early physicians had discarded the theory of evil spirits and hypothesized that deaths were caused by problems with the air in the mines.

Only hundreds of years and numerous studies later would experts realize that the mysterious black material miners had labeled “pechblende” was riddled with uranium, and that the sickness was not the result of mountain demons, but of radiation exposure, often co-occurring with silicosis or tuberculosis.

By the 1930s, it was clear that radon was to blame for the high lung cancer rates among Eastern European miners, says Dr. Jonathan Samet, dean of the Colorado School of Public Health and chairman of the Committee on Health Risks of Exposure to Radon.

But it wasn't until 1984 in Pottstown, Pennsylvania, that U.S. scientists realized the dangers of radiation exposure extended far beyond the mines.

That year, the new Limerick nuclear power plant was under construction. In preparation for the radioactive material the plant would soon receive, workers had installed radiation detectors to ensure workers wouldn't leave contaminated.

But when employee Stanley Watras walked through one December day on his way in, the alarms blared. Confused, plant workers measured Watras and found high levels of radiation all over his body.

Knowing the radiation couldn't have come from the plant, a crew later went to his home to investigate, finding areas inside with radiation levels more than 1,000 times the recommended exposure level — the result of accumulated radon gas.

In 1986, Congress asked the EPA to determine the extent of the indoor radon problem, and after surveying nearly 5,700 homes, the EPA announced that an estimated 6% of homes — 5.8 million homes in 1990 — had potentially dangerously high levels of radon.

Determined to discover what that meant for people living in those homes, Bill Field, a professor at the University of Iowa, began what would become a seminal study on indoor radon exposure and health risk.

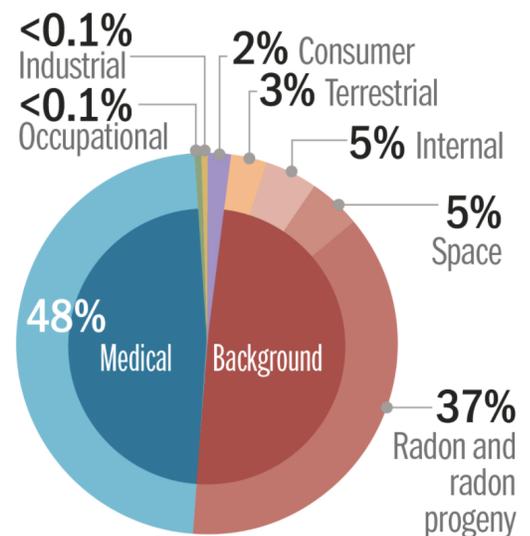
From 1993 to 1996, he followed 413 women in Iowa who had been newly diagnosed with lung cancer and 614 women without cancer, and monitored radon levels in every home — where the women had all lived for at least 20 years.

After adjusting for age, smoking and education, Field and colleagues found a 50% increased risk for lung cancer based on long-term exposure to elevated radon levels.

Subsequent case-control studies, including a European analysis of 13 cases comprising 7,148 cases of lung cancer and 14,208 controls, as well as 1,050 cancer cases from two Chinese studies and 3,662 cases from the U.S. and Canada all show a similar connection — the greater the radon exposure, the greater the risk of cancer, with no safe level of exposure — whether you're in a mine or a basement bedroom.

## Sources of radiation exposure

Exposure by source 2019



NOTE: Numbers may add to more than 100, due to rounding  
SOURCE: EPA.gov

Deseret News



Photo illustration by Michelle Budge

# 10 ways to protect your family from radon

*Ignorance is not bliss, choose to take action now*

By Sara Israelsen-Hartley - Jan. 29, 2020

---

*Editor's note: This investigative report was produced with support from the University of Southern California Annenberg Center for Health Journalism's National Fellowship.*

SALT LAKE CITY — We all worry about keeping our families safe. That's why we change our smoke detector batteries, get our furnaces checked for CO leaks and ensure our windows and doors are safely covered and locked. But we may not be worried enough about radon — a silent, colorless, odorless gas that settles in our basement and increases our long-term risk for lung cancer. Here are 10 things you can do today to protect your family.

## **Learn about radon**

Check out the Deseret News' special coverage on radon as well as [radon.utah.gov](http://radon.utah.gov) and [epa.gov/radon](http://epa.gov/radon).

## **Test your home**

Testing is simple and costs only \$11 for a short-term test. Utahns can order a test kit [here](#). Those who live in other states can check out [epa.gov/radon](http://epa.gov/radon). You can also use a long-term test for the remainder of the winter — the best time to test anyway. If you want faster data, a continuous radon monitor will give you day-by-day readings and monthly averages. And remember, just because your neighbor's home tested low doesn't mean your home will too. Every home needs to be tested independently — no matter where you live or how old or new your home is. Even homes without basements can have elevated levels.

## **Retest your home**

Indoor radon levels can vary based on the time of year, weather conditions and any household renovations — even

something as simple as replacing a window. Testing every few years ensures your home is staying safe over time. If you install a mitigation system, it's important to retest regularly to ensure the fan is working correctly. If your home was built with a passive radon mitigation system, testing will help you know if it's working, or if you need to add a fan to pull out more of the heavy gas.

### **Install a mitigation system**

If your radon levels are elevated, call a few certified radon mitigators and get some quotes. If your budget is tight, ask if they offer a low or no-interest payment plan or start saving now and install it as soon as you can.

If you're planning to buy a home in the near future, make sure a radon test is done and the cost of a potential mitigation system is factored into the negotiations.

### **Speak up**

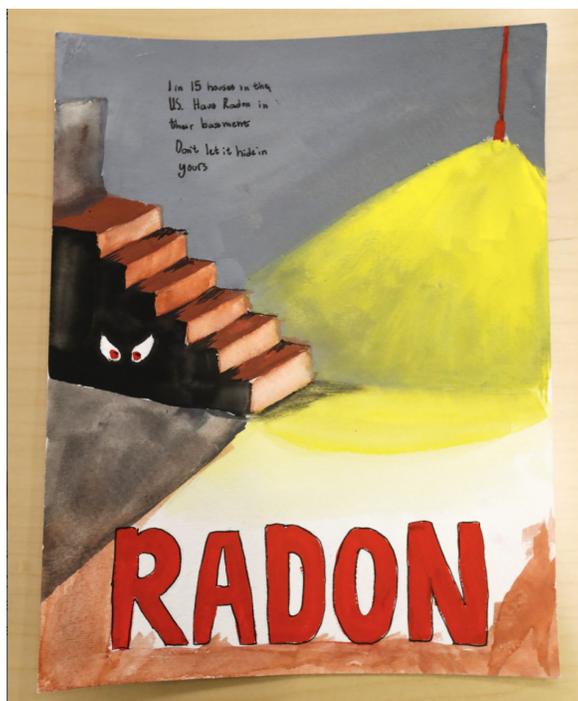
If you're renting and can't test or mitigate on your own, talk with your landlord. Share with them what you've learned about radon and why exposure is so concerning. They may be more willing to do something about it than you think.

### **Make the changes you can**

If you can't afford a mitigation system now, or your landlord says no, take steps to reduce your exposure to radon. Move children's bedrooms and playrooms out of the basement. Change or request that furnace filters be changed regularly, and consider buying a portable air cleaner. Open windows and doors more often as weather allows and spend more time out of your home, whether that's at the park, the library, or at friend's and family's houses.

### **Spread the word**

Talk with your neighbors — tell them about your radon levels and encourage them to test. Consider giving radon test kits as housewarming or baby-shower gifts. In Utah, 1 in 3 homes has elevated levels of radon, so high levels shouldn't be seen as an embarrassing revelation or a potential home sale-breaker — but an easily fixable situation.



The winning poster from the 2020 National Radon Poster Contest was created by Utah's Emma Moore, an eighth grader from Olympus Junior High School, Granite School District. Her poster is photographed at the Utah Department of Environmental Quality offices in Salt Lake City on Monday, Dec. 16, 2019. *Steve Griffin, Deseret News*

### **Get involved**

Reach out to your school principal, PTA or community council and bring this issue to their attention. Show them the state PTA resolution on radon that encourages action. Ask if there's a testing policy for your child's school.

If you're a doctor or pediatrician, ask your patients if they've tested their homes for radon. This booklet can help with that conversation.

If you're involved with a city, community organization or HOA board, consider adding a note about radon to a utility bill, or other flyer or newsletter, especially during the winter months.

### **Show compassion**

Lung cancer carries a stigma, as people generally assume patients brought it on themselves by smoking. Yet nonsmokers also get lung cancer, so avoid judgements or assumptions, and show kindness to anyone dealing with lung cancer.

### **Remain optimistic**

It's never too late to do something about radon. Reducing your exposure to radon now will allow your body to start repairing any potential cell damage. Even people who have lived in their homes for 20 years can make a difference — for themselves, their children and grandchildren — by doing something today.