



Radon is a colorless and odorless radioactive gas that is the leading environmental cause of lung cancer in the United States. Radon occurs naturally in rocks and soil and can enter homes and other buildings undetected, where it can be found in dangerous amounts. High levels of radon indoors can be measured and fixed, meaning most cases of radon-related lung cancer can be prevented.

In the late 1980's the United States Environmental Protection Agency (EPA) and Surgeon General began recommending that every home be tested for radon. Since then, people have performed millions of radon tests, assessing levels in their homes, schools, and workplaces. Many buildings with elevated radon have been fixed. Unfortunately, millions of people are still exposed to elevated radon levels where they live, work and go to school. Many homes and other buildings have not even been tested let alone fixed, and radon continues to be a significant public health concern in the United States.

A great amount of testing data has been, and will continue to be, collected by states and tribes, businesses and laboratories. Over the years, radon leaders—public officials, industry champions, and health advocates—increasingly recognized that a systematic organization of this data would be beneficial. Those stakeholders understood that beyond data's use in each individual case, the information could have so much greater usefulness once it was collated, analyzed, and disseminated for widespread use. Therefore, the leaders not only saw that there was a need for data stewards such as state agencies, local and tribal authorities, and radon testing laboratories to participate in a well-managed program of data sharing, but they set in motion the steps to establish just such a program.

The Centers for Disease Control and Prevention (CDC) has recognized the following advantages of tracking radon information:

- Increasing public awareness of radon prevalence, risk, and action steps,
- Increasing radon testing, leading to people taking radon reduction measures, and
- Helping public officials make informed decisions and take action to protect public health from radon.

In addition to recounting the work that went into the creation of the tracking program, this brief summarizes what information it contains, describes some of its uses and benefits and encourages both old and new participants to contribute additional data and outlines how to do that.

Origins of the environmental public health tracking network and radon's place in it

In 2000, the Pew Environmental Health Commission issued a report that recommended the establishment of a national environmental public health tracking effort to collect data about a range of environmental exposures in one place and to characterize the related burden of disease. In 2002, federal funding was appropriated to create the [National Environmental Public Health Tracking Program](#) (Tracking Program) administered by the CDC. For two decades, the CDC has managed the Tracking Program, and now collects, curates, analyzes and displays data for about 30 different content areas.

Over time, professionals working in radiation protection as well as in public health and policymaking came to understand that the data on radon testing that had been amassed over the years had great potential value to 1) better monitor public exposure and risk from indoor radon and 2) identify opportunities where needs exist, and resources should be developed and deployed to meet them. It became clear that radon, as the second leading cause of lung cancer, should be well-represented in any health tracking work, and that making the best use of radon data must be part of any comprehensive approach to environmental health.

The CDC Tracking Program, with participation of federal and state stakeholders, established a Radon Task Force in 2010 to study radon datasets that were available and to evaluate how those might be integrated. In 2014, the Task Force issued a [report](#) describing further progress that had been made and could be considered. CDC then consulted with eight states (CO, MD, ME, MO, NH, NM, SC, WA) to develop candidate measures for a national radon database. To facilitate the development process, Colorado Department of Public Health and Environment (CDPHE) took on an interim role as a data repository and collator for data submitted by private radon testing laboratories.

EPA and CDC entered into an interagency agreement to conduct pilot data collection programs in 2013-14 and 2015-16, working with over 700,000 unique radon test results collected between 1993 and 2013 in six states (CO, FL, KS, NJ, UT, VT). Shortly thereafter, the CDC established radon as one of the content areas for the EPHT.

Progress to date

Each spring, the CDC Tracking Program issues a call for data using a process by which states and laboratories can keep personally identifiable information confidential, resulting in data publicly displayed aggregated in no finer detail than at the county or (in time) census tract level. Participation is completely voluntary but strongly encouraged. For example, any recognized radon testing laboratory is welcome to submit data, and all states, even those not receiving a CDC Tracking Grant, are invited to submit radon test data to the Tracking Program. Though contributions of data are not yet routine from all parties—significant gaps remain and many more states and labs have yet to join—CDC nevertheless has received significant submissions each year over the past decade.

At this writing, the program has assembled, validated, and analyzed data voluntarily provided by testing laboratories (producing data for 9 measures for 46 states and the District of Columbia) and states (8 measures). Bearing in mind the overlap among datasets provided by states and laboratories:

- in 2012 through 2018, beginning with the assistance of Eric Brown of CDPHE and later with that of Dallas Jones of the American Association of Radon Scientists and Technologists, 7 laboratories (Accustar, AirChek, Alpha Energy, EMSL, RAL, Radalink, and SunRadon) submitted 1,914,094 results collected during the years 2005 through 2017.
- in 2014 through 2023, 21 states (AK, CO, CT, FL, IL, KS, LA, MN, MO, NE, NJ, NY, NC, OR, PA, RI, TN, UT, VT, WA, WI) submitted 11,934,310 results collected during the years 1988 through 2022.

The CDC Tracking Program is also working with certain Tribal Nations looking to build their capacity to carry out radon tracking work and is identifying data measures and developing the tools necessary to follow radon data collected for multi-family housing, especially with respect to guidance provided by the Department of Housing and Urban Development, and by the Federal Housing Finance Agency (FHFA).

Data collected and made available

The following information has been submitted to the CDC Tracking Program, processed, aggregated by year or by spans of ten years, and then made available for the use of the public, media, and decision-makers. At all times, confidentiality of personal information is maintained.

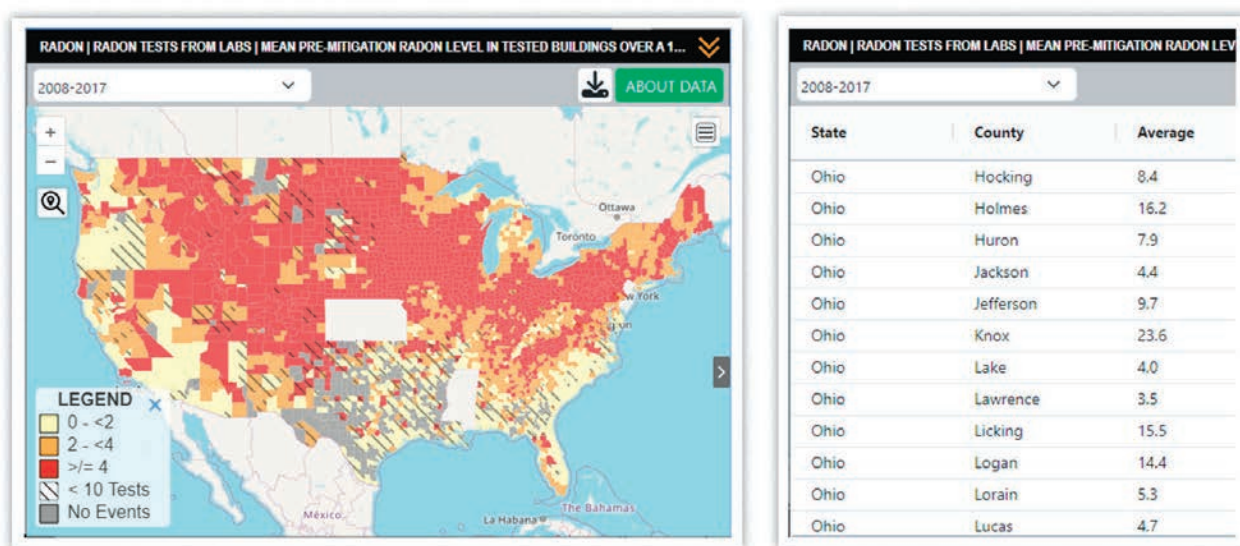
Radon Test Data from Labs:

- number of buildings tested
- number and percent of pre-mitigation* tests by radon level
- number and percent of post-mitigation* tests by radon level
- maximum, mean, and median pre-mitigation* radon levels in tested buildings
- rate of housing units tested

Radon Test Data from States:

- number of buildings tested
- number and percent of pre-mitigation* tests by radon level
- number and percent of post-mitigation* tests by radon level
- maximum, mean, and median pre-mitigation* test levels of radon

* Pre-mitigation figures also include test results not designated as either pre- or post-mitigation values.



The CDC Tracking Program's interactive Data Explorer Tool can be used to display data in charts, tables or maps according to the user's needs. Although substantial data has been collected and can be displayed, there are limitations:

- Data submissions are nearly all from self-selected radon testing and not from random sampling, though to some extent the volume of data provided can mitigate against potential biases.

- Though labs, states, tribes, and the CDC Tracking Program have made serious efforts to clean the data, the possibility remains for issues such as multiple results reported for a single address, mischaracterization of whether tests were performed before or after mitigation, etc.
- Not all radon laboratories or states that collect data have submitted it for use on this portal. New labs and states are needed to join the ranks of participating contributors, especially to help fill in parts of the country where shared data is otherwise sparse or even absent.
- Data submissions are often limited to certain years and may only come from a subset of contributors in any given year.
- Much of the data submitted by laboratories has been reported through 2017, but in many cases datasets from past strong participants haven't been refreshed since then and need to be updated.

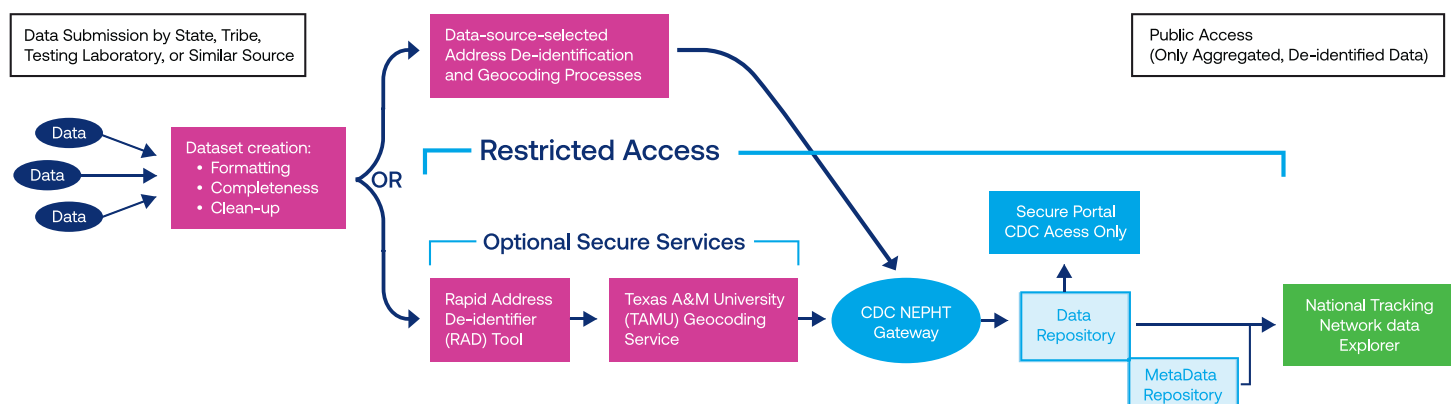
How data submission works and how contributors can participate:

Given the limitations cited, the CDC Tracking Program actively encourages states, tribes and radon testing laboratories to submit data they have collected. Additional datasets are always welcome, both from past participating agencies and firms as well as from new contributors. The program issues a data call every spring, but the agency is always prepared to assist program participants.

To aid in keeping account of what data have been received and what has not yet been reported, the data are typically handled in year-by-year datasets. The Tracking Program provides detailed guidance for contributors' data managers so they understand what data are needed, how it should be formatted, and how to submit it. Such guidance is available both on <https://ephtracking.cdc.gov/> as well as by writing to trackingsupport@cdc.gov.

The CDC Tracking Program takes data confidentiality very seriously and provides services to accomplish this such as its Rapid Address De-identifier (RAD) tool and Texas A&M University's (TAMU) Geocoding tool. Alternatively, data contributors are free to use the TAMU service directly or other independent resources to create de-identified geocoded files. In either case, these methods ensure that personal information remains inaccessible by the end user.

In general, data are then made available to public users at no finer resolution than the county level. However, the program encourages submission of data by census tract, which in the future should make the data more useful for decision-making about how to direct resources within counties with widely different radon levels and population characteristics. To further protect confidentiality, data aggregation is used to describe many of the results, and cautionary notation is made if there are fewer than ten results in a given county.



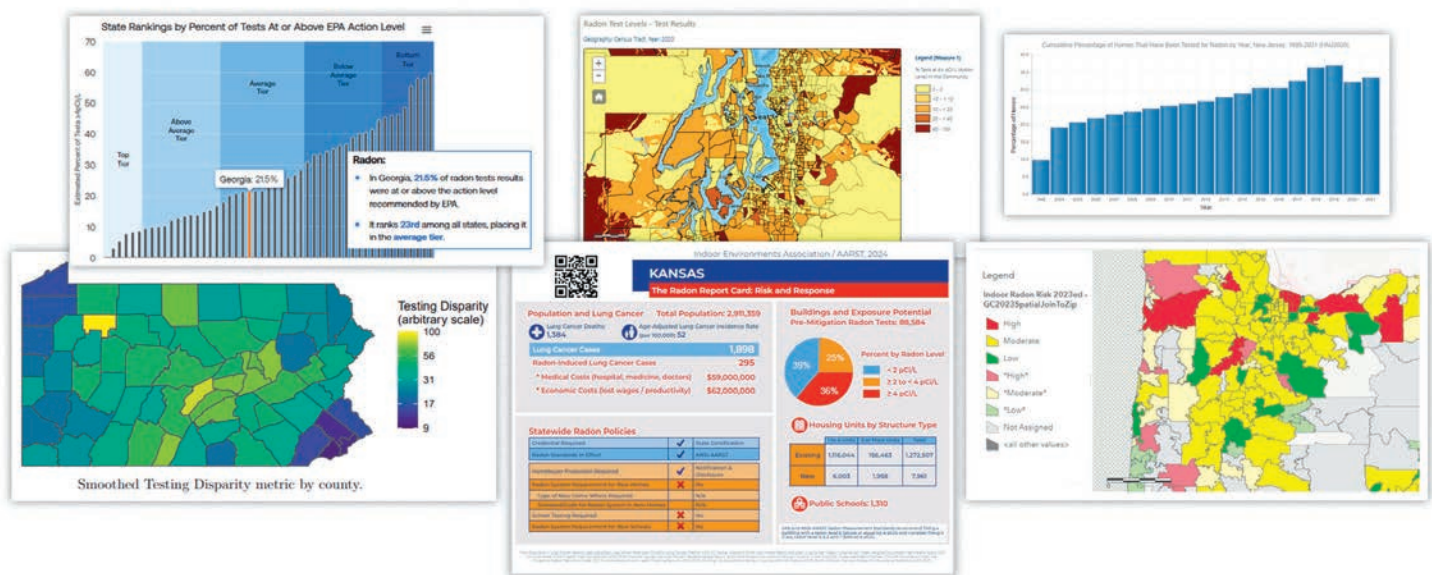
Making use of the data

As the CDC [Tracking Program](#) emphasizes:

“Analyzing, collecting, and disseminating radon testing information is the first step to developing policies and educational resources that can help prevent the harmful health effects related to elevated radon exposures. For example, tracking radon data in a standard way over time can help us identify areas with low testing that might have high levels of radon. These data can inform planning and implementation of public health actions for areas with the greatest need.”

Many states have used tens or hundreds of thousands of radon test results to help identify areas of higher risk or special need. Organizations working to protect public health from radon exposure have also made use of the data supplied to the CDC Tracking Program. A few examples include:

- The development of maps showing radon hazards for areas smaller than counties such as ZIP Codes and U.S. Census tracts, with resulting news coverage about them helping to raise public awareness and spur testing. ([Oregon](#), and [map](#))
- Combining tracked radon data with other information to identify previously unknown locations of higher risk where little or no testing had been conducted. ([Washington](#), and [map](#))
- Using tracking information to evaluate progress with respect to objectives set forth in state health programs or comprehensive cancer control plans. ([New Jersey](#))
- Developing metrics with which 1) to show radon exposures that should be reduced to help people avoid lung cancer and 2) to demonstrate where undertesting, given the expected levels of radon, appears to be more significant, and where public officials may consider devoting more resources. (American Lung Association [report](#) and [tools](#))
- Educating policymakers about the levels of radon and approximate radon-related lung cancer mortality in their states and localities to emphasize the extent of the problem and to support further preventive policies and laws. ([Indoor Environments Association](#))



Conclusion

The CDC Environmental Public Health Tracking Program has functioned as an excellent service, not only for the display of radon data but also as the foundation for the creation of information summaries and decision-making tools. Many states and organizations have found creative and useful ways to apply the gathered data to develop information solutions.

But the Tracking Program resource is only as strong as the level of support it receives. Gaps remain in geographic coverage and in keeping datasets updated. More data are always welcome, from state agencies and from radon testing laboratories, both in past years and in the future. Contributing to this effort is a worthy public service and CDC and many participants stand ready to provide guidance.

Disclaimer

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