



NC RADON TOOLKIT



..... 2026

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INTRODUCTION

Radon is a naturally occurring radioactive gas that forms from the decay of uranium in soil and rock. Uranium is found naturally in all rocks and soil in varying levels across North Carolina. Uranium may be more prevalent in the ground in the mountains, but rock and soil are excavated from areas such as the mountains, and those materials may be used to create building materials such as concrete, sandstone, and gypsum board. If present, buildings in the piedmont or coastal regions have the potential to have elevated radon levels.

Radon is colorless, odorless, and tasteless, and can accumulate in homes and buildings through cracks in foundations, basements, crawl spaces, and private well water. Long-term exposure to elevated radon levels is the leading cause of lung cancer among non-smokers and represents a preventable environmental health risk.

In North Carolina, radon exposure is a significant but often under-recognized public health issue. Elevated indoor air radon levels have been measured in at least one home in all 100 counties of North Carolina. Due to underlying geological formations, 61 counties are considered at higher risk for elevated indoor radon levels, and more than 170,000 radon data points have been collected statewide over the past 15 years. It is possible, for those homes served by a private well, that elevated levels may be because the radon may travel through the plumbing from the private well. Elevated radon levels in all counties, particularly in the remaining 39 counties, could be due to uranium existing within the building materials of the building.

While radon is included in statewide planning efforts such as the North Carolina Comprehensive Cancer Control Action Plan and the North Carolina State Health Improvement Plan, it is frequently absent from county-level Community Health Assessments (CHAs). The absence of statewide radon regulations and limited CHA-specific guidance have contributed to inconsistent recognition of radon at the local level.

As lung cancer continues to be the greatest cause of cancer mortalities, promoting the testing of radon in local buildings aligns with local CHA priorities related to environmental health, health disparities, and social determinants of health, specifically housing quality, geography, rurality, and access to information. Data collected through the 2015 and 2019 North Carolina Behavioral Risk Factor Surveillance System have demonstrated a significant difference in knowledge of radon among various populations. People of color, of lower income, and lower levels of education are up to 60 percent less likely to know about radon than their counterparts.

Demographic data from the NC Data Portal indicate that many counties with elevated environmental health burdens also have higher proportions of populations that have historically experienced health inequities. While radon exposure and awareness are not directly measured by demographic characteristics alone, these patterns underline the importance of culturally appropriate education, multilingual resources, and equitable access to radon information and data.

This toolkit was developed to address a gap in existing CHA resources by providing structured guidance on how radon testing can be appropriately incorporated into the CHA process. By aligning existing state-supported radon data, educational materials, and technical assistance with established CHA frameworks and timelines, the toolkit supports local health departments (LHDs) in recognizing radon as a relevant environmental health issue within assessment, prioritization, and planning activities.

1. PURPOSE

The North Carolina Radon Community Health Assessment (CHA) Toolkit is designed to support North Carolina Local Health Departments (LHDs) in appropriately incorporating radon-related data, education, and technical assistance into CHAs and Community Health Improvement Plans (CHIPs). The toolkit guides how existing state-supported radon resources can be used to strengthen assessment, documentation, and data-driven decision-making in alignment with North Carolina and federal public health expectations. It focuses on integrating radon into the CHA process by outlining when radon data and educational resources can be used, how radon indicators support assessment standards, and how technical assistance may enhance analysis.

The toolkit does not prescribe clinical or regulatory actions, require radon testing or mitigation, or replace existing CHA guidance. Instead, it serves as a supplemental resource that aligns radon-related activities with established CHA frameworks, timelines, and reporting requirements. Content is intentionally scoped to support assessment, prioritization, and planning functions, rather than program implementation or enforcement.

2. AUDIENCE DESCRIPTION

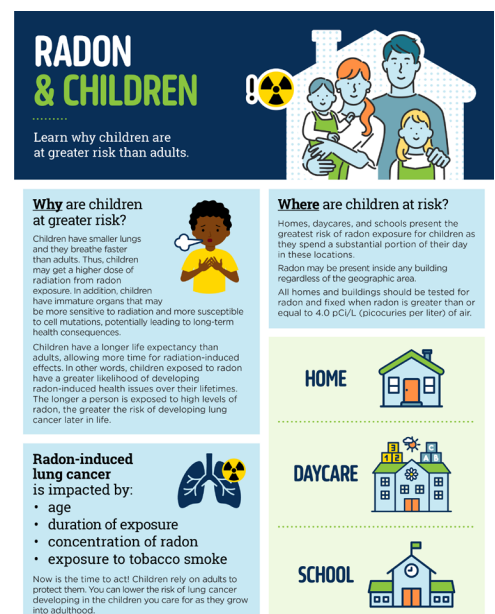
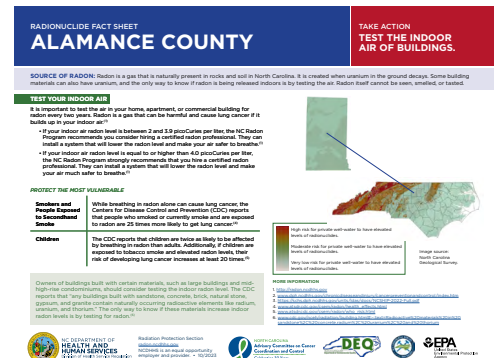
This toolkit is intended for use by LHD staff involved in CHA and CHIP development, including public health leadership, CHA coordinators, environmental health staff, health educators, data analysts, and epidemiologists.

3. NC RADON PROGRAM BROCHURES AND EDUCATIONAL RESOURCES

Radon Brochures

This folder contains a comprehensive collection of radon-related educational and planning materials from the NC Radon Program to support LHDs, CHAs, and community outreach efforts. Resources include:

- **county-specific radon recommendations,**
 - This subfile includes county-specific radon fact sheets that provide locally relevant information on radon exposure, health risks, and recommended actions. Materials describe the source of radon, emphasize the importance of routine indoor air testing, and outline recommended follow-up actions based on measured radon levels. The fact sheets also highlight populations that may be at increased risk, such as children, smokers, and individuals exposed to secondhand smoke, and may include county-level context related to housing or environmental conditions. Local health departments may use these county-specific materials to complement CHA findings, support community education efforts, and reinforce locally relevant guidance related to radon awareness, testing, and mitigation.
- **educational materials on radon exposure in children and pets,**
 - This subfile includes educational fact sheets available in both English and Spanish that focus on radon exposure risks among children and pets, populations that may be more vulnerable to environmental hazards due to physiological factors and time spent indoors. The materials explain why children and pets may experience higher relative exposure to radon, highlight the role of indoor environments such as homes, schools, and day care, and reinforce the importance of routine radon testing and mitigation when elevated levels are identified. These resources are designed for public education and partner engagement and include clear messaging supported by visual graphics and evidence-based references. Local health departments may use these materials to support inclusive community outreach, engage caregivers and pet owners, and complement CHA narratives that address environmental health risks, household exposure, and lung cancer prevention.



- **health care provider guides,**

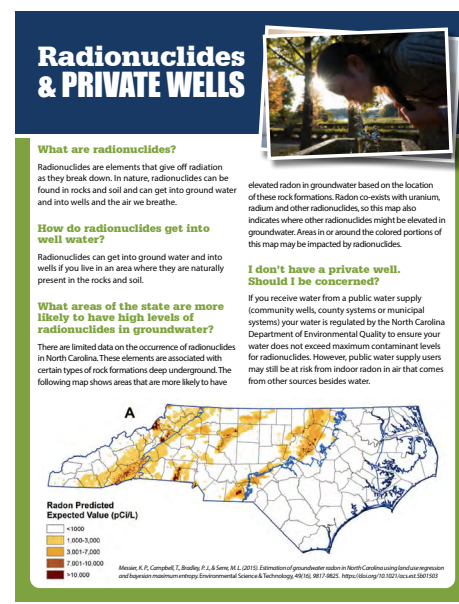
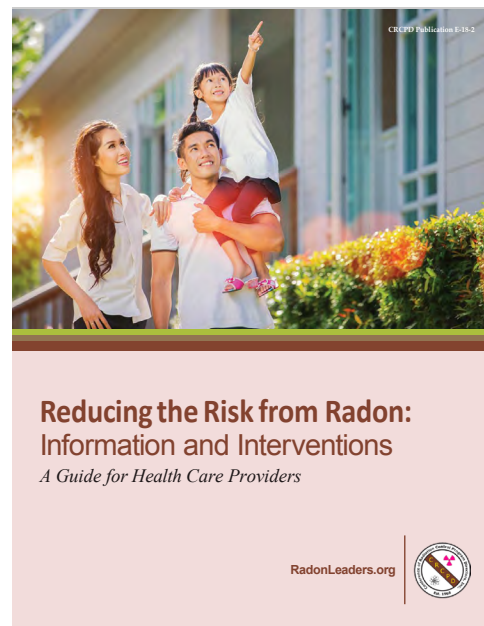
- The subfile includes radon guidance materials developed specifically for health care providers and available in both English and Spanish. These resources summarize the health risks associated with radon exposure, emphasize the relationship between radon and lung cancer (including combined effects with smoking), and outline evidence-based actions related to radon testing and mitigation. The materials are designed to support providers in communicating radon risks to patients, identifying teachable moments for prevention, and integrating radon education into routine clinical conversations. Local health departments may reference or share these guides to demonstrate engagement with clinical partners, support cancer prevention efforts, and document connections between environmental exposures and health outcomes within a CHA. These materials may also be used to highlight opportunities for collaboration between public health and health care systems in reducing radon-related lung cancer risk.

- **radionuclide and well water fact sheets and FAQs,**

- This subfile includes fact sheets, frequently asked questions, and technical guidance related to radionuclides in private well water, including radon, uranium, and radium. The materials explain how radionuclides naturally occur in North Carolina groundwater due to underlying geology, describe potential health risks associated with exposure, and outline recommended testing considerations for private well owners. Several resources provide maps and summaries of areas with higher susceptibility to elevated radionuclide levels, as well as guidance on interpreting test results and potential mitigation or treatment options. These materials are intended to support environmental health context and education rather than regulatory enforcement. Local health departments may use these resources to supplement CHA narratives related to environmental exposures, groundwater-dependent populations, and housing conditions, and to document the availability of state-supported guidance and technical assistance for communities relying on private wells.

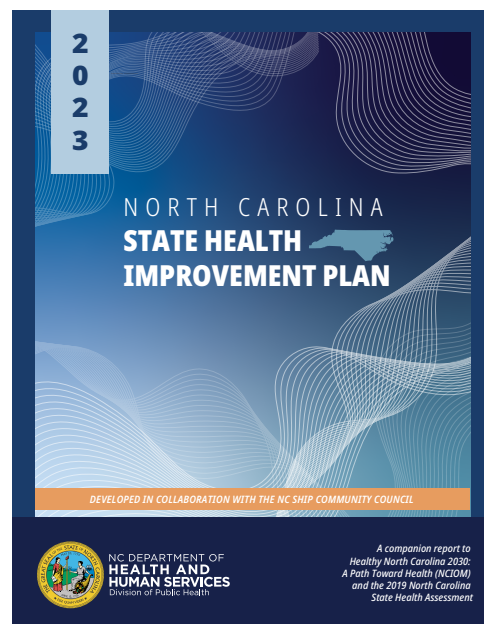
- **real estate-focused materials for buyers, sellers, and homes with radon mitigation systems,**

- This subfile includes radon educational materials designed for use during real estate transactions, including resources for homebuyers, sellers, and occupants of homes with existing radon mitigation systems. The materials explain the health risks associated with radon exposure, emphasize the importance of radon testing during the home buying and selling process, and provide guidance on interpreting test results. Additional resources describe how radon mitigation systems work, what homeowners should know about system operation



and maintenance, and considerations for homes that have already been mitigated. These materials support awareness at key housing decision points and are intended for education and communication rather than enforcement. Local health departments may use these resources to support multiple sector engagement with housing and real estate partners, document housing-related environmental health considerations in a CHA, and reinforce opportunities to reduce radon exposure as part of broader lung cancer prevention efforts.

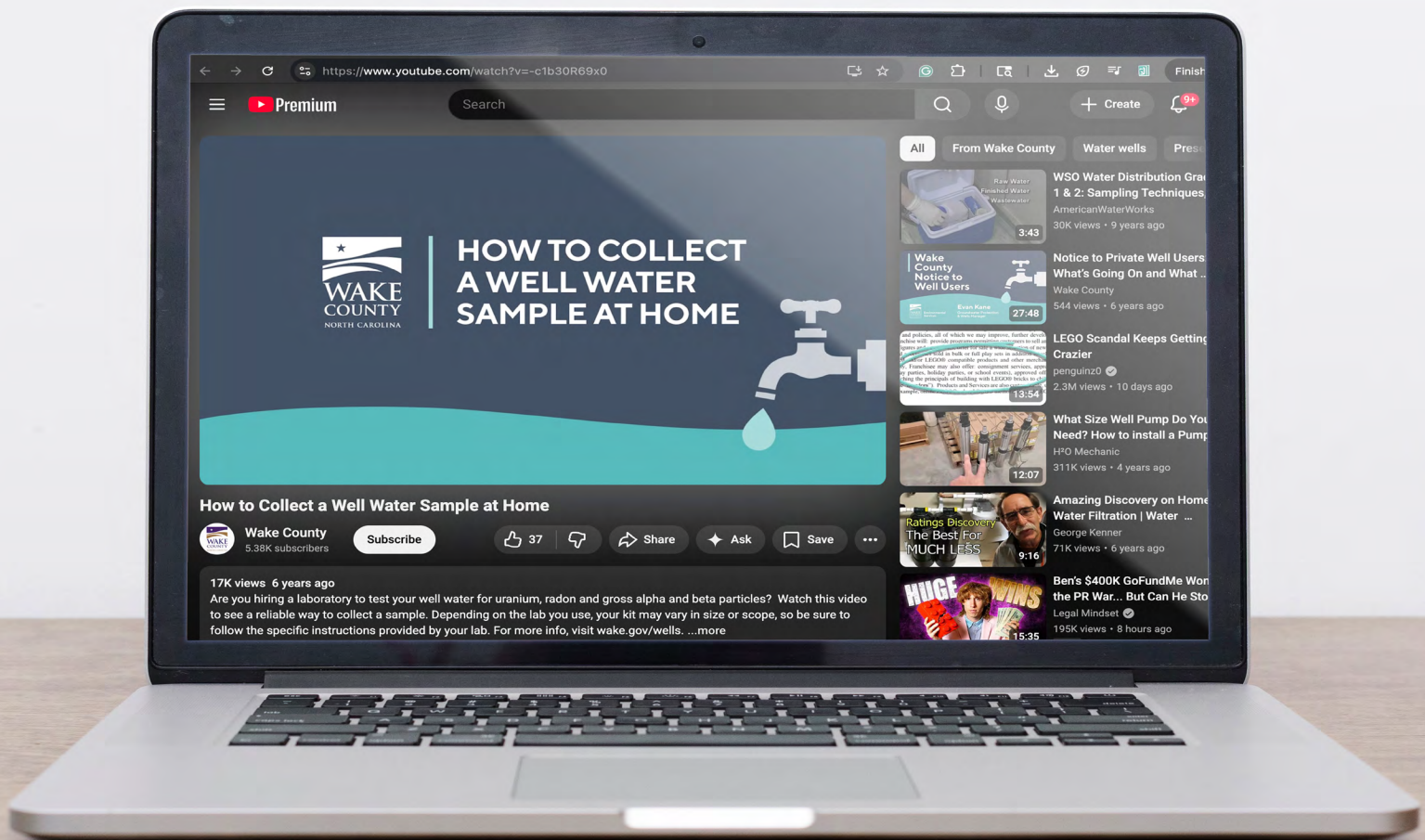
- **relevant state planning documents, such as the North Carolina Comprehensive Cancer Control Action Plan and the North Carolina State Health Improvement Plan,**
 - This subfile includes statewide public health planning documents with outline priority health goals, prevention strategies, and evidence-based actions across North Carolina. These plans identify lung cancer as a priority health issue and recognize environmental exposures, including radon, as modifiable risk factors that can be addressed through prevention, education, and testing. Local health departments may reference these planning documents to align CHA findings with statewide priorities, demonstrate consistency with state prevention goals, and contextualize how inclusion of radon data supports broader efforts to reduce lung cancer risk and advance health equity. These documents provide strategic context rather than prescriptive requirements and may be used to support narrative framing and goal-setting within a CHA.
- **translated basic radon fact sheets.**
 - This subfile includes basic radon fact sheets designed for broad public education and available in multiple languages, including English, Spanish, Arabic, Cantonese, German, French, Hindi, Hmong, Korean, Mandarin, Portuguese, Russian, Tagalog, Tamil, Telugu, and Vietnamese. The materials provide information on what radon is, how it enters homes, why radon exposure increases lung cancer risk, and why testing is the only way to determine radon levels in a building. The fact sheets also reinforce key prevention messages related to radon testing and mitigation and include clear visual graphics to support understanding. These multilingual resources support inclusive and equitable communication by helping local health departments reach diverse communities and populations with limited English proficiency. Local health departments may use these fact sheets to support community outreach, public education, and partner engagement activities, and to complement CHA narratives that address environmental health risks, indoor air quality, and lung cancer prevention.



4. LOCATE AND DOCUMENT NC RADON PROGRAM VIDEOS

The NC Radon Program has also produced several videos to assist LHDs and CHAs with communicating the health risks associated with radon exposure. Those include:

- [Radon: NC Data Portal and NC Environmental Health Dashboard](#)
 - This video provides an explanation of how to utilize the North Carolina Data Portal and the NC Environmental Health Dashboard when developing and including radon in local CHAs. This video is approximately 53 minutes.
- [PSA Radon Animation Video English Version](#)
 - The video emphasizes that smoking is not the only cause of lung cancer — radon exposure also contributes significantly to risk, especially in indoor environments. It encourages viewers to test their homes for radon and understand their personal risk in order to take preventive action and protect their health. This video is approximately 1 minute and 21 seconds long and is available in both English and Spanish.
 - [PSA Radon in North Carolina - Spanish Version](#)
- [Radon Awareness](#)
 - This video, located on the NC Department of Health and Human Services' YouTube page, is approximately 1 minute and 15 seconds long, and it contains a synopsis of the Basic Radon Fact Sheet described below. The video is in the following languages as well:
 - [Radon Awareness English](#)
 - [Radon Awareness Spanish](#)
 - [Radon Awareness Video French](#)
 - [Radon Awareness Cantonese](#)
 - [Radon Awareness Video Deutsch/German](#)
 - [Radon Awareness Hindi](#)
 - [Radon Awareness Chinese](#)



- **Radon Awareness Video Sign Language**
 - This video is approximately 13 minutes and communicates the entire Basic Radon Fact Sheet.
- **School Radon Mitigation Design Considerations**
 - This video provides an overview of key strategies for reducing radon levels in school buildings. It highlights how building design, HVAC systems, and foundation features influence radon entry and explains common mitigation approaches such as active soil depressurization. The presentation emphasizes the importance of proper planning and system design to protect students and staff from radon exposure. The video is approximately 50 minutes.
- **Radon ANSI Consensus-Based Standards**
 - This video provides an overview of national consensus standards for radon measurement and mitigation, explaining how these ANSI-accredited protocols promote consistency and quality in radon testing and system design across different types of buildings. It emphasizes the importance of standardized practices to ensure reliable radon assessments and effective mitigation that protect occupants' health. This video is approximately 38 minutes.
- **Radon and Lung Health**
 - This video explains that radon is a naturally occurring, invisible, and odorless radioactive gas that can accumulate in indoor spaces and poses a serious health risk because it is the second leading cause of lung cancer after smoking. It encourages viewers to understand radon's dangers and to take action by testing their homes to protect themselves and their families. This video is approximately 1 minute and 40 seconds.
- **How a Radon Mitigation System Works**
 - This video provides a step-by-step walkthrough of a typical radon mitigation system installation, demonstrating how suction is created beneath a building's slab to draw radon gas safely away from living spaces. It explains key components of the system and how they work together to reduce indoor radon levels and improve indoor air quality. This video is approximately 2 minutes and 30 seconds.
- **How to Collect a Well Water Sample at Home**
 - This video by Wake County, offers a practical demonstration on properly collecting a home well water sample for laboratory testing, particularly when evaluating contaminants such as uranium, radon, and other radioactivity indicators. It guides viewers through the sampling process to ensure accurate results from professional analysis, emphasizing the importance of correct technique to avoid contamination or errors before sending samples to the lab. This video is approximately 5 minutes.
- **NC Housing Finance Agency Grant Program for Radon Mitigation**
 - This video highlights a grant program offered by the North Carolina Housing Finance Agency that helps homeowners and property owners secure funding to address elevated radon levels in residential buildings. It explains how the program supports radon mitigation efforts by making financial assistance available to reduce indoor radon exposure and improve long-term health outcomes. This video is approximately 35 minutes and 40 seconds.

5. LOCATE AND COLLECT NC RADON PROGRAM SOCIAL MEDIA IMAGES

Radon Program Social Media Images

The NC Radon Program, with support from the NCDHHS Office of Communications, has developed a collection of educational social media images available through this folder. These materials are designed for use across multiple social media platforms, including Facebook, Instagram, and X, and support public education and outreach related to radon. Some of the images are initially created by the Centers for Disease Control and Prevention (CDC) and modified to address both statewide radon messaging and county-specific content. Topics covered include general radon awareness, county-level radon data, and promotion of state-led initiatives. The collection includes 37 images in English and 36 Spanish versions, which support broader accessibility and outreach to diverse communities across the state. Social media-based materials provide a low-barrier method for disseminating radon education and may be used to support community engagement activities associated with CHAs.



6. REVIEW EDUCATIONAL MATERIALS FOR RELEVANCE TO CHAS

NC Data Portal Resource URL

The NC Data Portal provides access to radon-related data and visualizations for all counties in North Carolina, including maps and charts that display geographic patterns and changes in radon testing and test results over time. In addition to data displays, the NC Data Portal includes a “Resource URL” section that provides direct links to county-specific radon communication and educational materials. These resources may include radon fact sheets, healthcare provider materials, and social media graphics and videos relevant to the selected county or counties. The availability of location-specific resources supports CHA teams by providing ready-to-use communication materials that can inform community engagement and public education efforts aligned with assessment findings.

7 & 8. ACCESS THE NC ENVIRONMENTAL HEALTH DASHBOARD & IDENTIFY RADON INDICATORS AVAILABLE IN THE DASHBOARD

NC Environmental Health Dashboard

Radon indicators are presented consistently across state-supported data systems, including the Environmental Health Data Dashboard (EHDD) and the NC Data Portal. In these systems, radon is represented through reported radon test results from residential and commercial buildings and summarized using standardized measures and visualizations, such as county maps, trend chapters, comparisons across jurisdictions, and fact sheets. The accompanying dashboard figures included in this toolkit illustrate how radon testing data are displayed and interpreted for use in CHAs.

9. APPENDIX. NORTH CAROLINA ENVIRONMENTAL HEALTH DATA DASHBOARD (EHDD)

Purpose of This Appendix

This appendix describes the North Carolina Environmental Health Data Dashboard (EHDD) as a state-supported source of environmental health data that may be used to inform Community Health Assessments (CHAs) conducted by North Carolina Local Health Departments (LHDs). It provides guidance on the appropriate use of radon-related measures from the EHDD to support assessment, analysis, and public health planning.

Overview

The EHDD is supported by the North Carolina Environmental Public Health Tracking Program within the Occupational and Environmental Epidemiology (OEE) Branch of the North Carolina Department of Health and Human Services (NCDHHS). The Tracking Program serves as a central hub for environmental health and climate-related data in North Carolina by collecting, standardizing, analyzing, and disseminating information on environmental exposures, health outcomes, demographics, and social determinants of health. The EHDD brings together county-level environmental and health data to inform decisions about health and the environment. The dashboard includes over 100 standardized measures related to environmental exposures, health outcomes, and community characteristics. Since radon exposure is a known environmental risk factor for lung cancer, radon indicators available through the EHDD may provide useful environmental context when interpreting lung cancer patterns or discussing prevention opportunities in a CHA.

Radon Measures Available in the EHDD

Radon indicators presented in the EHDD are based on radon test results reported by testing companies for residential and commercial buildings. These indicators reflect reported radon test results and should be interpreted as measured data rather than population-wide exposure estimates. Radon data are available at the county level for multiple years (2010-2024) and may be incorporated into CHAs as data sources.

The EHDD includes the following radon measures for residential and commercial buildings tested:

- Maximum radon level test result
- Median radon level test result
- Minimum radon level test result
- Number of residential and commercial buildings tested for radon

These measures may be used to describe indoor air quality conditions, characterize potential exposure risk within the community, and identify patterns across time or geography. When interpreted alongside health indicators such as lung cancer incidence or mortality, radon data may provide additional environmental context for understanding potential risk factors.

Analytics Relevance to CHAs

The EHDD provides functionality that supports CHA analysis and documentation, including the ability to:

- View county-level radon data using geographic maps
- Examine trends in radon measures over time within a county
- Compare radon indicators across multiple counties
- Explore radon measures alongside other environmental, health, or socioeconomic indicators, including health outcomes such as lung cancer
- Access fact sheets and contextual information describing available measures

Radon data may be downloaded and incorporated into CHA tables, figures, or summaries, as appropriate.

Appropriate Use of EHDD Radon Data in the CHA Process

Radon-related data from the EHDD may be used at multiple stages of the CHA process, including:

- **Data Collection**
 - To describe environmental health conditions and potential indoor air quality concerns within the community. Since radon exposure is associated with increased lung cancer risk, radon testing indicators may also help provide environmental context when examining lung cancer patterns within a county.
- **Data Review and Analysis**
 - To assess county-level patterns, examine trends over time, and compare local data to other jurisdictions.
- **Health Problem Identification and Prioritization**
 - To support the identification of radon as a relevant environmental or housing-related health concern when interpreted alongside additional data sources, including lung cancer data and community input.

EHDD data should be used in combination with other quantitative and qualitative information to provide a comprehensive understanding of local conditions.

Limitations

Radon test results included in the EHDD are reported voluntarily by testing companies and do not represent all radon tests conducted within North Carolina. As a result, findings may not be generalizable to all households or buildings within a county. Additionally, statewide average radon values are not provided because of outliers that may skew interpretation. CHA teams should interpret EHDD radon data and supplement findings with additional data sources, local context, and community input.



10. ACCESS THE NC DATA PORTAL

[Community Health Assessment](#) (The NC Data Portal can be reached via this link.)

11. NC DATA PORTAL

The North Carolina Data Portal provides access to radon-related indicators that may be used as sources in CHAs. Radon data available through the NC Data Portal are provided by the NCDHHS Division of Public Health and reflect radon test results voluntarily reported by radon testing laboratories in North Carolina. Within the portal, radon indicators are located under the Physical Environment domain within the Air & Quality - Radon Testing category. Radon testing indicators may provide useful environmental context when interpreting lung cancer patterns or discussing prevention opportunities in a CHA, as radon exposure is a recognized environmental risk factor for lung cancer. The NC Data Portal allows users to generate reports for multiple geographic areas, including:

- counties,
- the state of North Carolina,
- local health districts and regions,
- state agency regions, and
- NC partner regions.

Multiple locations may be selected to support comparison across jurisdictions.

Available Radon Indicators and Measures

Radon datasets available through the NC Data Portal describe both radon testing activity and radon test results.

- **Radon Testing Activity**
 - Number of residential buildings tested for radon
 - Radon testing per rate per 10,000 housing units

These measures describe the extent of radon testing within a community and may be used to assess testing coverage rather than overall population exposure.

- **Radon Test Results**
 - Mean pre-mitigation radon level among tested buildings
 - Median pre-mitigation radon level among tested buildings
 - Maximum pre-mitigation radon level among tested buildings

These measures summarize radon concentrations detected through testing and may be used to describe indoor air quality conditions among tested buildings that have been tested.

When interpreted alongside health indicators such as lung cancer incidence or mortality, radon test results may provide additional environmental context for understanding potential exposure patterns and prevention opportunities.

Years of Available Data and Trend Analysis

Radon datasets available through the NC Data Portal span multiple years, with data available from 2010 through 2014. The availability of multi-year data allows LHDs to:

- review trends in radon testing rates over time,
- identify whether radon represents an ongoing or emerging environmental health concern.
- examine changes in radon test results, and

Trend data may be useful when describing patterns over time in CHAs.

Radon Test Result Categories

The NC Data Portal also reports the distribution of radon test results by concentration category, including:

- Test results < 2 pCi/L
- Test results ≥ 2 and < 4 pCi/L
- Test results ≥ 4 pCi/L

These categories align with the U.S. Environmental Protection Agency (EPA) guidance and may be used to contextualize radon-related risk in CHA narratives.

Data Display and Comparison Features

The NC Data Portal allows CHA analysis by viewing radon data in multiple formats, including:

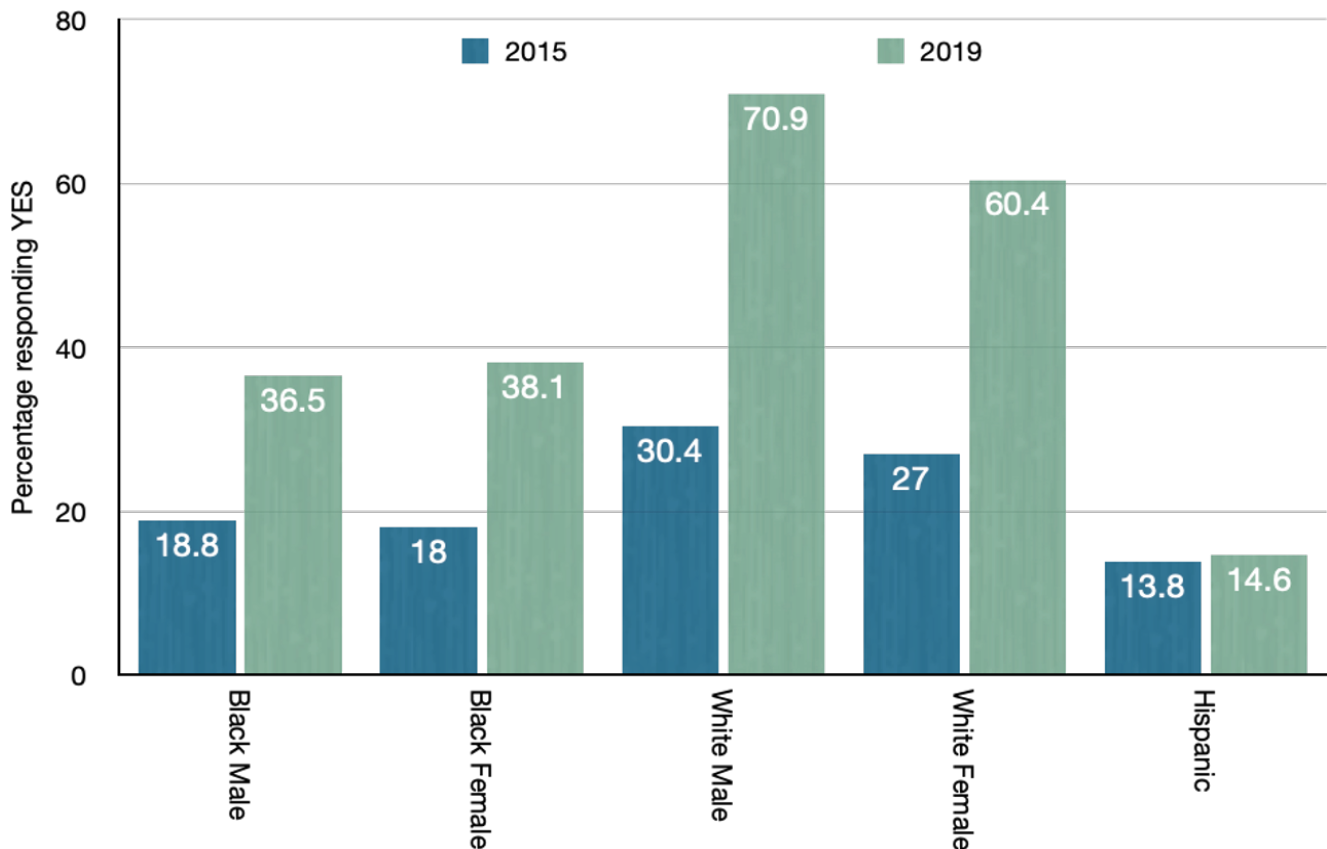
- tables,
- charts, and
- county maps.

Users may compare selected locations to statewide values and examine differences across counties or regions. Data may be downloaded for use in CHA tables, figures, or narrative summaries.

Limitations

Radon indicators available through the NC Data Portal are based on voluntarily reported radon test results submitted by radon testing laboratories. As a result, the data reflect only buildings that have been tested and reported and may not represent all buildings or households within a county. Since testing is not conducted uniformly across communities, testing activity may vary by location. Areas with higher testing rates may appear to have higher radon levels simply because more testing has occurred. Radon test results should therefore be interpreted as measured data from tested buildings rather than estimates of population-wide exposure. CHA teams are encouraged to interpret NC Data Portal radon indicators in combination with additional data sources, local knowledge, and community input when assessing environmental health conditions.

BRFSS Responses to Question “Do you know what radon gas is?”



12. REVIEW HISTORICAL RADON DATA AND TRENDS

Radon in NC Schools Testing Data 1989-1993

* Data is shown at the bottom of the NC Radon Data Dashboard *

Radon in NC Schools Testing Data 1989-1993

Within the North Carolina Department of Health and Human Services (NCDHHS) Radon Program section, “NC Radon Data,” historical findings highlight early efforts to evaluate radon exposure in educational settings:

- In response to the U.S. Environmental Protection Agency’s determination that schools may represent a significant source of radon exposure, the North Carolina Radiation Protection Program conducted a pilot survey in 20 public schools during 1989-1990, obtaining 400 classroom measurements across summer and winter testing periods.
- The results demonstrated that radon concentrations in school classrooms were comparable to regional residential levels, reinforcing the need for routine radon testing and ongoing monitoring in educational facilities to safeguard the health of students and staff.
- The U.S. Environmental Protection Agency recommends a comprehensive testing strategy for schools, including testing all frequently occupied rooms on and below ground level, as radon concentrations can vary significantly from room to room, and conducting testing during cooler months when levels are typically highest.
- In 1990-1991, the North Carolina Department of Public Instruction supported school-based radon testing efforts; however, results were maintained locally and not compiled statewide.
- In 1997, North Carolina Radiation Protection (NCRP) retrieved much of the original survey data and, in 1998, expanded testing to an additional 35 school districts lacking prior data.
- To date, radon survey data have been compiled from 1,102 schools, representing 23,448 classrooms across 94 of North Carolina’s 100 counties.
- The average measured radon concentration was 1.79 pCi/L, with approximately 11% of tested classrooms exceeding the EPA action level of 4.0 pCi/L, reinforcing the need for ongoing monitoring and mitigation in educational facilities.

Behavioral Risk Factor Surveillance System (BRFSS) data from 2015 and 2019 illustrate important trends in public awareness of radon gas across demographic groups.

In 2015, awareness levels were generally low, with fewer than one-third of surveyed respondents in any group reporting that they knew what radon gas is. By 2019, awareness increased substantially among Black and white respondents, particularly among White males and females.

- Awareness among Hispanic respondents remained comparatively low and showed minimal change over time.
- These historical data highlight both progress in radon education efforts and the continued need for targeted, culturally responsive outreach to ensure equitable awareness and prevention efforts statewide.
 - This data is available within the BRFSS Data section within the NCDHHS Radon Program Dashboard, and provides links to the 2015 and 2019 data sets as well.

[2015 Data Set](#)

[2019 Data Set](#)

13. IDENTIFY SERVICES PROVIDED BY THE OEE BRANCH

The Occupational & Environmental Epidemiology (OEE) Branch within the North Carolina Department of Health and Human Services Division of Public Health provides environmental and occupational health expertise to identify and assess exposures that may impact human health. Core services include:

- environmental health surveillance,
- data analysis,
- risk assessment,
- guidance on environmental contaminants such as indoor air quality and radon,
- technical assistance to local health departments,
- public education resources,
- additional radon information from numerous sources, such as the Center of Disease Control and Prevention (CDC) as well as the United States Environmental Protection Agency (US EPA), and
- contact information for any further questions.

OEE also supports programs such as environmental health data tracking, Choose Safe Places for child care, and occupational health monitoring. The OEE branch also provides information on the North Carolina Radiation Protection Section (RPS), the state's central authority for radon-related activities

Located within the Division of Health Service Regulation at the North Carolina Department of Health and Human Services, the RPS is responsible for managing and supervising North Carolina's statewide radon education, outreach, and regulatory programs. As the official recipient of the federal State Indoor Radon Grant (SIRG), the RPS channels these funds to support initiatives aimed at reducing radon risk throughout the state.

14. DOCUMENT HOW LHDS CAN REQUEST OEE ASSISTANCE

Local Health Departments (LHDs) may request radon-related assistance from the Occupational and Environmental Epidemiology (OEE) Branch by contacting the program directly through the OEE "Contact Us" webpage. Requests should include a clear description of the concern, the location of the property or facility, building type (e.g., residence, school, childcare center), available radon test results, and any relevant environmental or health information. The OEE contact page provides multiple methods of communication, including phone, fax, and email, as well as mailing and physical addresses. LHDs and partners are encouraged to use these channels to ensure timely coordination and response to radon-related concerns. OEE contact information is listed below:

Technical Assistance Available

LHDs and their partners may request technical assistance related to data available through the NC Environmental Public Health Tracking Program. Technical assistance is available to support CHAs, Community Health Improvement Plans (CHIPs), Public Health Preparedness plans, and other public health reports. The Tracking Program can assist LHDs with:

- creating custom data visualizations, such as maps, charts, and tables,
- providing environmental, health, and socioeconomic data at the county and census level tract levels,
- helping interpret environmental health indicators available through the EHDD and other environmental health data sources, and
- supporting analysis of environmental health conditions relevant to local public health planning.

LHDs may request assistance using the [Technical Assistance Request Form](#). Questions about the EHDD, requests to be added to the program's email distribution list, or request for additional support may be directed to nceph_support@dhhs.nc.gov. Additional information on available environmental health datasets can be found in the [North Carolina Environmental Public Health Data Inventory](#), which lists state and federal data sources used to measure environmental hazards and related outcomes. Before submitting a data request, LHDs should review the [NCDHHS Data Sharing Guidebook](#), which outlines policies and procedures for accessing and sharing data within the Department, as well as other government agencies and partners.

**Hours, Phone, Fax, Email**

Hours: Monday-Friday, 8:00 a.m - 5:00 p.m. (except holidays)

Phone: (919) 707-5900

Fax: (919) 870-4807

Email: oeeb@dhhs.nc.gov

**Mailing Address**

NC Division of Public Health

Epidemiology Section

Occupational and Environmental Epidemiology Branch

1912 Mail Service Center

Raleigh, NC 27699-1912

**Physical Address**

65 Moore Drive

Durham, NC 27703

15. ALIGNMENT WITH NORTH CAROLINA COMMUNITY HEALTH ASSESSMENT EXPECTATIONS

North Carolina Community Health Assessments (CHAs) are conducted in accordance with guidance, accreditation standards, and submission requirements established by the NCDHHS. State CHA guidance outlines expectations for how local health departments describe community health conditions, analyze contributing factors, document data sources, engage communities, and report findings. Environmental conditions are identified in NC CHA guidance as one of the several domains that may be used to provide context for population health outcomes and prevention efforts.

Use of Environmental Health and Physical Environment Data

NC CHA guidance recognizes the physical environment as a factor in community health and supports the inclusion of environmental context when describing health conditions and prevention opportunities. Local health departments may use environmental health data to help explain patterns observed in health outcomes and to inform community discussion during the assessment process. Radon testing data may be used as an environmental health indicator for communities seeking to support broader public health goals, such as reducing lung cancer risk. Incorporating existing radon testing data offers a way to add environmental context in a CHA and may help communities set goals related to awareness, education, or testing.

Use of Secondary and CHA Frameworks

NC CHA guidance emphasizes the use of secondary data and the application of an accepted framework or model (e.g., population health or health equity) to guide data selection and analysis. Environmental health indicators may be used within these frameworks to help explain patterns in health outcomes and disparities. Radon aligns with these frameworks by illustrating how environmental and housing conditions can contribute to chronic disease risk, including lung cancer. Radon testing data, maps, and trend analyses provide quantitative context, while community engagement activities may capture local perspectives related to housing quality, indoor air concerns, or awareness of radon testing and mitigation. Together, these data sources support a comprehensive assessment of environmental health conditions with the CHA.

Identification of Health Issues and Contributing Factors

NC CHA guidance directs local health departments to identify health issues affecting the community and to describe factors that contribute to those issues, including upstream and environmental contributors. Radon may be included as a contributing environmental factor that helps contextualize lung cancer risk or indoor air quality concerns within the broader CHA narrative.

Inventory of Community Health Resources

As a part of the CHA process, NC guidance supports local health departments to inventory community health resources that address identified health concerns or contributing factors. Radon-related resources such as testing programs, educational materials, data systems, and technical assistance may be included in the resource inventory to demonstrate existing capacity to support environmental health and lung cancer prevention efforts.

Documentation and Data Transparency

North Carolina CHA guidance emphasizes the importance of clearly documenting data sources, methods, and limitations. For environmental health indicators such as radon, local health departments have access to credible, state-supported data systems that are appropriate for use in CHAs and can be consistently cited across jurisdictions. Radon-related data are available through the EHDD and the NC Data Portal, which are maintained by the NCDHHS. Radon data presented in these systems originates from radon test results reported by radon testing laboratories and companies to the North Carolina Radon Program. These data are compiled, standardized, and analyzed by NCDHHS branches, including the OEE Branch, before being disseminated through the EHDD and NC Data Portal. Radon indicators in these systems are updated on a regular basis, with new data incorporated as they become available, allowing CHA teams to access current and multi-year information for assessment and trend analysis. Both the EHDD and NC Data Portal present radon data using tables, maps, trend visualizations, and downloadable reports, and include source information that supports transparent documentation in CHA reports. When incorporating radon data into a CHA, local health departments may cite the EHDD or NC Data Portal as the data source and describe the information as state-supported radon testing data reported through NCDHHS systems. Using these platforms supports consistent reporting, transparency, and alignment with state CHA expectations.

Health Equity and Community Context

NC CHA guidance emphasizes examining differences in health conditions across populations and geographic areas. Environmental conditions, including housing and indoor air quality, may vary by location and community characteristics. When used, radon data may support equity-focused discussion by highlighting differences in testing activity or measured radon levels across counties or regions and by informing conversations about access to testing and education.

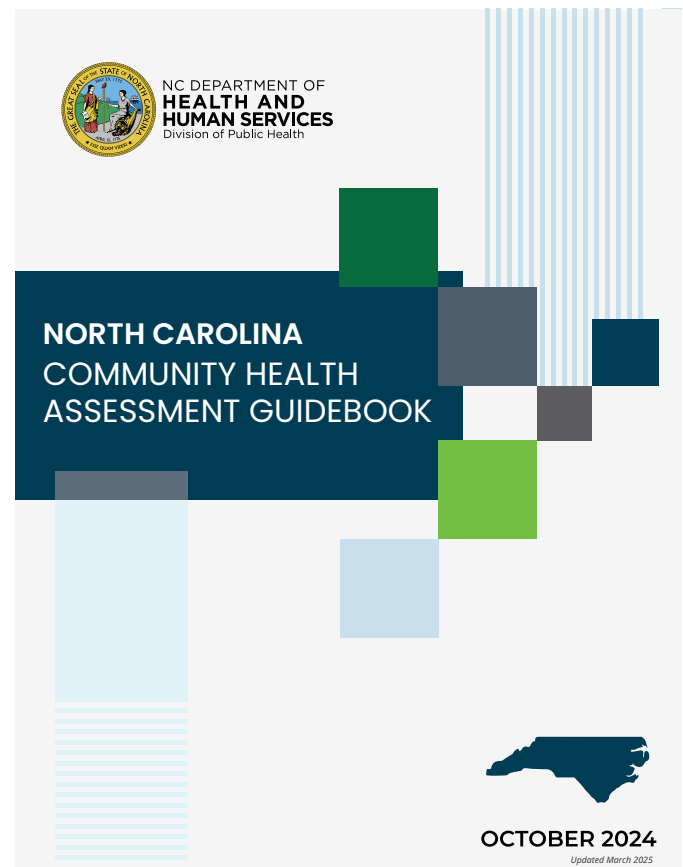
North Carolina Community Health Assessment Guidebook

16. ALIGNMENT WITH FEDERAL COMMUNITY HEALTH ASSESSMENT GUIDANCE

Federal public health guidance from the Centers for Disease Control and Prevention (CDC) describes CHAs as a systematic, data-driven process used to understand community health conditions, identify contributing factors, and inform planning and improvement efforts. CDC guidance recognizes environmental conditions as one of many factors that may influence population health and prevention outcomes. Radon testing data may be used as an environmental health indicator to help communities contextualize lung cancer risk and support locally determined prevention goals.

Use of Comprehensive and Systematic Data

CDC guidance describes CHAs as a process that brings together data from multiple domains including demographic, socioeconomic, health outcome, and environmental information to develop a comprehensive understanding of community health. Environmental data are commonly used to provide context for chronic



disease outcomes and prevention strategies. Radon testing data may be used as an optional environmental health indicator for communities seeking to better understand environmental factors related to lung cancer risk. Including available radon data can support broader prevention goals without requiring additional data collection.

Use of Secondary Data Sources

CDC guidance supports the use of secondary data sources or data that have already been collected and maintained by credible organizations to inform CHA development. Using secondary data helps improve efficiency, consistency, and comparability across assessments. State-supported radon data available through systems such as the EHDD and the NC Data Portal may be used as secondary data sources when radon is relevant to local priorities. These platforms provide accessible, ready-to-use data that can be incorporated into CHAs.

Use of Indicators, Benchmarks, and Trend Data

Federal guidance highlights the use of indicators and trend data to describe health-related conditions, examine changes over time, and compare patterns across populations or geographic areas. Radon testing indicators (e.g., number of buildings tested, summary test results) may help communities describe environmental conditions and set locally appropriate goals related to awareness or testing as a part of broader health improvement efforts.

Consideration of Contributing Factors and Drivers of Health

CDC guidance recognizes that health outcomes are influenced by a range of contributing factors, including environmental and housing-related conditions. These factors may be documented in a CHA. Radon may be included as a contributing environmental factor that helps contextualize lung cancer risk or indoor air quality concerns, supporting a more complete understanding of community health drivers.

Community Engagement and Interpretation of Data

Federal guidance emphasizes the importance of pairing quantitative data with community engagement to ensure local context and perspectives are reflected in assessment findings. Community input related to housing conditions, awareness of radon testing, or indoor air quality concerns may help interpret findings and inform locally appropriate next steps.

Linking Assessment Findings to Planning and Improvement

CDC guidance encourages the use of CHA findings to inform CHIPs, including identifying opportunities for action and setting goals aligned with community priorities. Radon testing data may support broader prevention goals, such as reducing lung cancer risk, by helping communities identify opportunities for education, outreach, or increased awareness.

Use of Established Frameworks and Tools

CDC guidance highlights the use of established planning frameworks (such as population health models and MAPP) that incorporate environmental health as part of overall community conditions. Radon data and resources can be integrated into existing CHA frameworks without requiring new processes.

[CDC: Community Planning for Health Assessment](#)

23. HOW TO USE RADON DATA IN A COMMUNITY HEALTH ASSESSMENT

Local health departments may choose to incorporate radon information into a Community Health Assessment to provide additional context about environmental health conditions and lung cancer risk. Existing state data and resources make it possible to incorporate radon indicators without additional data collection.

Possible ways to use radon data in a CHA include:

- **Describing environmental health conditions:**
Use radon testing indicators from the NC Environmental Health Data Dashboard (EHDD) or NC Data Portal to describe indoor air quality concerns or environmental risk factors within a county or region.
- **Providing context for lung cancer data:**
Radon exposure may be discussed as one environmental factor associated with lung cancer risk, alongside other factors such as tobacco use and occupational exposures.
- **Illustrating geographic patterns:**
County-level radon testing indicators may help identify patterns or areas where additional testing or awareness efforts may be beneficial.
- **Supporting community health planning:**
Communities interested in addressing environmental health or lung cancer prevention may use radon awareness, testing, or education activities as potential strategies within Community Health Improvement Plans (CHIPs).
- **Highlighting available resources:**
Educational materials, testing guidance, and technical assistance resources included in this toolkit may help local health departments support outreach, education, or partnership activities related to radon.

24-26. DATA APPLICATIONS

Table 1. North Carolina CHA Expectations and Radon Data Applications

CHA Component	Source	CHA Expectation	Example Application Using Radon Data
Describe community health conditions using credible data	NC CHA Guidebook	CHAs incorporate credible quantitative and qualitative data to describe community health conditions and contributing factors.	Radon testing data from NC Environmental Health Data Dashboard (EHDD) or NC Data Portal may provide environmental health context related to indoor air quality and lung cancer risk.
Analyze factors influencing health outcomes	NC CHA Guidebook	CHAs identify upstream factors that influence community health outcomes, including environmental and housing conditions.	Radon exposure may be described as an environmental factor contributing to lung cancer risk and indoor air quality concerns.
Apply a community health framework	NC CHA Guidebook	CHAs typically use population health or health equity frameworks to guide data analysis and interpretation.	Radon indicators may illustrate how environmental and housing conditions intersect with chronic disease risk and environmental health disparities.
Identify community resources and assets	NC CHA Guidebook	CHAs document programs, services, and community resources that address health issues.	Radon testing programs, mitigation resources, educational materials, and technical assistance may be included as environmental health resources available in the community.

CHA Component	Source	CHA Expectation	Example Application Using Radon Data
Align with statewide health priorities	NC Comprehensive Cancer Control Action Plan; NC State Health Improvement Plan	State planning documents identify priority health issues and prevention strategies.	Radon awareness and testing efforts may support broader lung cancer prevention goals outlined in statewide planning initiatives.
Document data sources and methods	CHA-CHIP-SOTCH Submission Guidance	CHAs should clearly identify data sources, collection methods, and limitations.	Radon indicators available through the EHDD and NC Data Portal can be cited as state-supported environmental health data maintained by NCDHHS programs.

Table 2. Federal Community Health Assessment Guidance and Radon Data Applications

CHA Component	Federal Source	CHA Guidance	Example Application Using Radon Data
Conduct systematic, data-driven assessment	CDC CHA Guidance	CHAs integrate multiple data sources to describe community health conditions and contributing factors.	Radon testing indicators may provide environmental health context related to indoor air quality and lung cancer risk.
Use secondary data sources	CDC CHA Guidance	Secondary datasets such as surveillance systems and environmental health databases are commonly used in CHAs.	Radon indicators from NC EHDD and NC Data Portal may serve as credible secondary data sources.
Use indicators and trend data	CDC CHA Guidance	Health indicators allow communities to track patterns and changes in health conditions over time.	Radon indicators, such as the number of buildings tested or summary test results may help illustrate environmental health patterns across counties or regions.
Consider drivers and contributing factors	CDC CHA Guidance	Environmental, housing, and social conditions may influence health outcomes and prevention opportunities.	Radon may be described as an environmental factor contributing to lung cancer risk.
Engage partners and stakeholders	CDC CHA Guidance	CHAs often involve collaboration with health care systems, community organizations, and other partners.	Radon education materials and health care provider resources may support collaboration with clinicians, housing partners, and community organizations.
Link assessment findings to improvement planning	CDC CHA Guidance	CHA findings inform Community Health Improvement Plans (CHIPs) and prevention strategies.	Radon awareness or testing initiatives may support broader lung cancer prevention strategies within community health improvement planning efforts.

27. DEVELOP COPY-READY CHA LANGUAGE FOR ENVIRONMENTAL HEALTH SECTIONS

Overview

Environmental health examines the physical, chemical, and biological factors external to individuals that can influence health outcomes. Environmental conditions, including air and water quality, housing stability, food access, sanitation, and exposure to environmental hazards, play a significant role in shaping community well-being.

Within the community, environmental health factors contribute to chronic disease prevalence, injury risk, respiratory illness, and overall quality of life. Addressing environmental determinants of health remains essential to reducing health disparities and promoting equitable health outcomes. One significant but often overlooked environmental health concern is radon exposure.

Radon is a naturally occurring radioactive gas formed from the breakdown of uranium in soil and rock. It is colorless, odorless, and tasteless, making it undetectable without specialized testing. Radon can enter homes and buildings through cracks in foundations, gaps around pipes, and other structural openings. Prolonged exposure to elevated radon levels is the second leading cause of lung cancer overall and the leading cause among non-smokers, according to the Environmental Protection Agency and the Centers for Disease Control and Prevention.

Radon risk varies by geographic region due to differences in soil composition and geology. Testing is the only way to determine radon levels in a home or building. Public health strategies to reduce radon exposure include community education, promotion of home radon testing, incorporation of radon-resistant construction techniques in new buildings, and mitigation efforts in structures with elevated levels. Increasing awareness and access to testing resources is particularly important in areas with older housing stock and limited financial resources for home repairs.

Air Quality

Air quality directly impacts respiratory and cardiovascular health. Exposure to air pollutants, including particulate matter (PM_{2.5}), ozone, and vehicle emissions, increases the risk of asthma, chronic obstructive pulmonary disease (COPD), heart disease, and premature mortality.

Regional air quality is monitored in collaboration with state and federal partners, including the Environmental Protection Agency. While overall air quality in the region generally meets federal standards, vulnerable populations, including children, older adults, and individuals with pre-existing respiratory conditions, remain at increased risk during periods of elevated ozone or wildfire-related smoke exposure.

Continued monitoring, public education, and mitigation strategies are recommended to minimize exposure risks. In addition to outdoor pollutants, indoor air quality is an important environmental health consideration. Radon can enter homes and buildings through cracks in foundations, construction joints, and gaps around service pipes. Because radon is colorless, odorless, and tasteless, testing is the only way to determine exposure levels. Since radon is the second leading cause of lung cancer, indoor air pollution is a high priority

Long-term exposure to elevated radon levels significantly increases cancer risk, particularly among individuals who smoke.

Public health strategies to improve air quality include continued monitoring of outdoor pollutants, promotion of clean transportation initiatives, enforcement of emission regulations, public education during high-risk air quality days, and increased awareness and testing for indoor radon exposure. Encouraging radon testing and mitigation, especially in areas with known elevated soil radon potential, remains an important prevention strategy.

Water Quality and Access

Access to clean and safe drinking water is foundational to public health. Municipal water systems are regulated under the Safe Drinking Water Act and routinely tested to ensure compliance with federal standards. However, households relying on private wells may face increased risks related to contamination from naturally occurring minerals, agricultural runoff, or aging infrastructure. In addition, radon can pose a risk to drinking water sources, particularly for homes that rely on private wells. While radon is more commonly associated with indoor air exposure, it can dissolve into groundwater and enter homes through well water.

Housing Safety

Safe and stable housing significantly influences health outcomes. Substandard housing conditions, including mold, pest infestation, inadequate heating or cooling, lead-based paint, and structural hazards, contribute to asthma exacerbations, injury, and chronic stress. Affordable housing availability also impacts environmental health by influencing residential crowding and housing instability, which are associated with poorer physical and mental health outcomes.

Another important environmental concern within homes is exposure to radon. Because radon is colorless and odorless, it can accumulate indoors without residents being aware of its presence. Long-term exposure to elevated radon levels is the second leading cause of lung cancer in the United States. Homes with basements or those built on certain geological formations may be at higher risk. Testing and mitigation systems can effectively reduce indoor radon levels and are important strategies for improving housing-related environmental health and preventing radon-related disease. Mitigation system requirements vary among North Carolina counties.

28. DEVELOP COPY-READY CHA LANGUAGE FOR DATA ANALYSIS SECTIONS

Radon Risk Assessment and Public Health Action

Radon exposure was included in the environmental health assessment due to its established link to lung cancer risk. This naturally occurring, radioactive gas is formed by the breakdown of uranium in soil and rock. Because radon is colorless, odorless, and tasteless, it can only be detected through specialized testing. Long-term exposure to high indoor radon levels is a recognized and significant public health concern. The Environmental Protection Agency (EPA) identifies radon as the second leading cause of lung cancer in the United States and the leading cause among non-smokers.

Data Analysis and Findings

Radon data were analyzed using available state and county-level test results from public health monitoring, including residential test kits, environmental inspections, and voluntary programs. Radon concentrations are measured in picocuries per liter (pCi/L). The EPA recommends mitigation measures when levels are 4.0 pCi/L or higher.

The analysis of test results helps public health professionals pinpoint geographic areas with elevated radon concentrations. It also reveals patterns linked to factors such as housing age, construction type, and geological characteristics. Specifically, areas with higher natural uranium levels in the soil are more susceptible to increased indoor radon, especially in homes with basements, crawl spaces, or structural openings that allow soil gases to enter.

The distribution of testing rates was also a critical part of the data analysis. Low testing rates can signal gaps in public awareness or obstacles to accessing testing resources, which could lead to an underestimation of the radon risk in those areas.

Recommendations for Public Health Intervention

The findings from the radon data analysis underscore the need for enhanced public health efforts. These should focus on increasing public outreach, expanding access to radon testing kits, and promoting mitigation strategies for homes with elevated levels.

Recommended interventions include community education, forming partnerships with housing agencies, and encouraging the use of radon-resistant construction techniques in all new buildings. By increasing awareness of radon risks and promoting testing, public health efforts can effectively reduce long-term exposure and lower the associated lung cancer risk within the community.

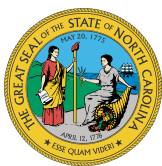
29. DEVELOP COPY-READY CHA LANGUAGE FOR PRIORITY SETTING

Priority Setting

Radon exposure was identified as a priority environmental health concern through a review of environmental health data and factors that influence indoor air quality. Radon is a naturally occurring radioactive gas produced from the breakdown of uranium in soil and rock. It can enter homes and buildings through cracks in foundations, gaps around pipes, and other structural openings, allowing it to accumulate indoors. Because radon is colorless and odorless, it cannot be detected without proper testing. According to the Environmental Protection Agency, radon is the second leading cause of lung cancer in the United States.

Due to the serious health risks associated with long-term radon exposure and the fact that many residents may be unaware of the presence of radon in their homes, increasing awareness and promoting testing were identified as key priorities. Radon exposure is preventable through simple testing methods and effective mitigation systems when elevated levels are detected. Prioritizing radon education, increasing access to testing information, and encouraging mitigation strategies can help reduce exposure risks and improve overall environmental health within the community.





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