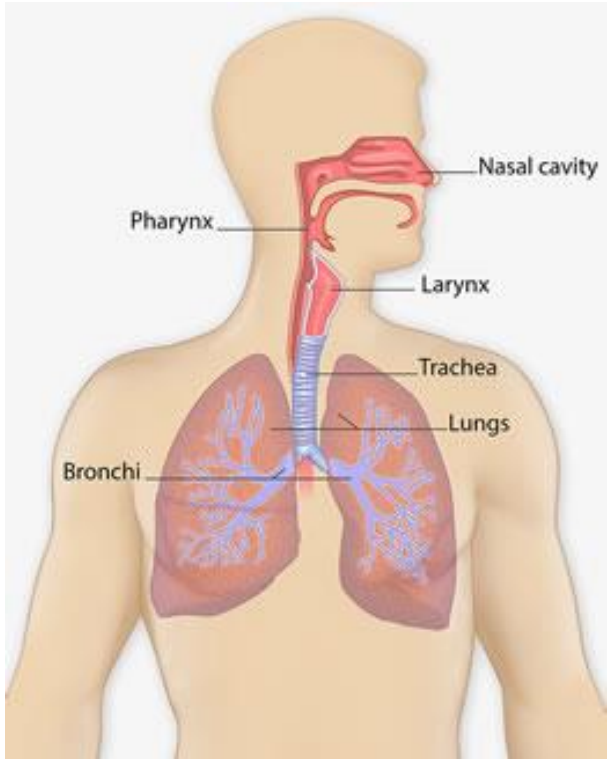
Field Placement with the Wisconsin Radon Program

ALLISON ANTOINE

FALL 2021

Background—Lung Cancer

- Lung cancer is the second most diagnosed and leading cause of cancer death in Wisconsin and the U.S.[1, 2]
- History of tobacco use is the leading cause of lung cancer, exposure to radon is the second leading cause of lung cancer among people who smoke[3]
- Exposure to radon is the leading cause of lung cancer among people who have never smoked[3]



Sources:
1. CDC, 2021 from https://www.cdc.gov/cancer/lung/basic_info/
2. Wisconsin Cancer Collaborative, 2021 from https://wicancer.org/resources/county-cancer-profiles/
3. EPA, 2021 from https://www.epa.gov/radon/health-risk-radon
4. Image source: https://www.cdc.gov/cancer/lung/basic_info/what-is-lung-cancer.htm

Background—Radon

- Radon is odorless and naturally occurring and is radioactive when uranium breaks down in soil, rock, and water. As it breaks down, radioactive particles can be breathed into your lungs.
- The EPA recommends testing your home for radon and mitigating the home if levels are above 4.0 picocuries per liter (4 pCi/L)[2]
- US Surgeon General Richard H. Carmona released a national health advisory on radon in 2005.[3]

News Release

FOR IMMEDIATE RELEASE
Thursday, January 13, 2005

Contact: HHS Press Office
(202) 690-6343

Surgeon General Releases National Health Advisory On Radon

U.S. Surgeon General Richard H. Carmona warned the American public about the risks of breathing indoor radon by issuing a national health advisory today. The advisory is meant to urge Americans to prevent this silent radioactive gas from seeping into their homes and building up to dangerous levels. Dr. Carmona issued the advisory during a two-day Surgeon General's Workshop on Healthy Indoor Environment.

"Indoor radon is the second-leading cause of lung cancer in the United States and breathing it over prolonged periods can present a significant health risk to families all over the county," Dr. Carmona said. "It's important to know that this threat is completely preventable. Radon can be detected with a simple test and fixed through well-established venting techniques."

Radon is an invisible, odorless and tasteless gas, with no immediate health symptoms, that comes from the breakdown of uranium inside the earth. Simple test kits can reveal the amount of radon in any building. Those with high levels can be fixed with simple and affordable venting techniques. According to U.S. Environmental Protection Agency (EPA) estimates, one in every 15 homes nationwide have a high radon level at or above the recommended radon action level of 4 picoCuries (pCi/L) per liter of air.

National Health Advisory on Radon

Radon gas in the indoor air of America's homes poses a serious health risk. More than 20,000 Americans die of radon-related lung cancer every year. Millions of homes have an elevated radon level. If you also smoke, your risk of lung cancer is much higher. Test your home for radon every two years, and retest any time you move, make structural changes to your home, or occupy a previously unused level of a house. If you have a radon level of 4 pCi/L or more, take steps to remedy the problem as soon as possible.

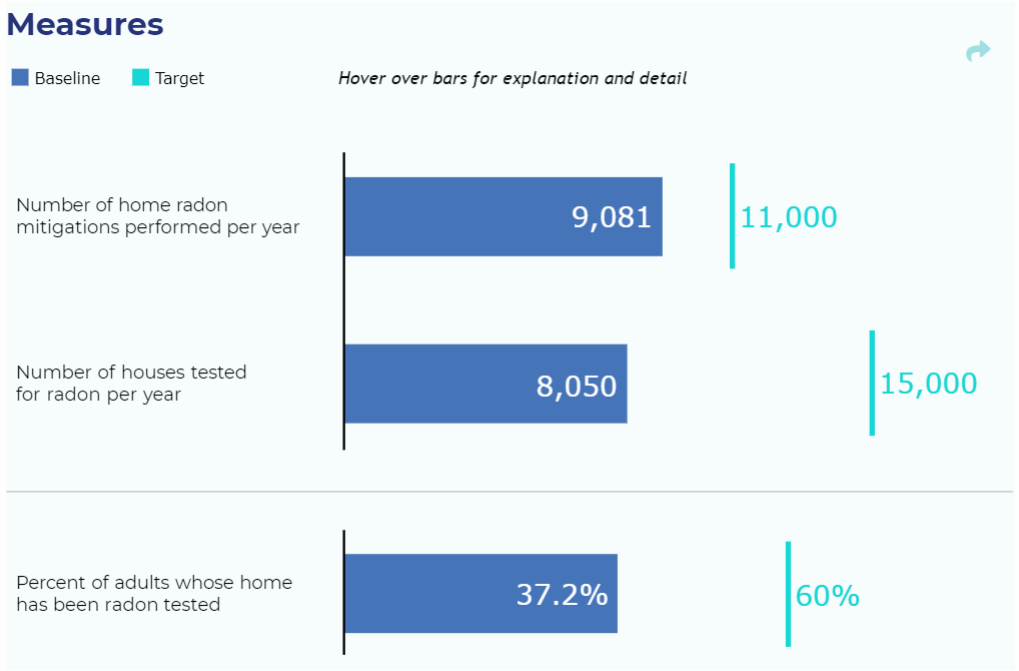
"Americans need to know about the risks of indoor radon and have the information and tools they need to take action. That's why EPA is actively promoting the Surgeon General's advice urging all Americans to get their homes tested for radon. If families do find elevated levels in their homes, they can take inexpensive steps that will reduce exposure to this risk," said Jeffrey R. Holmstead, Assistant Administrator, Office of Air and Radiation, U.S. Environmental Protection Agency (EPA).

"Based on national averages, we can expect that many of the homes owned or financed by federal government programs would have potentially elevated radon levels. The federal government has an opportunity to lead by example on this public health risk. We can accomplish this by using the outreach and awareness avenues we have, such as EPA's Web site, to share information and encourage action on radon to reduce risks," said Edwin Piñero, Federal Environmental Executive, Office of the Federal Environmental Executive (OFEE).

Sources:
1. DHS, 2021 from https://www.dhs.wisconsin.gov/radon/geological-radon.htm
2. EPA, A Citizen's Guide to Radon, 2016 from https://www.dhs.wisconsin.gov/radon/geological-radon.htm
3. HHS, 2005, from https://www.adph.org/radon/assets/surgeon_general_radon.pdf

Background—Radon & Lung Cancer Risk

- Prolonged exposure to radon gas can damage your lung tissue and may lead to lung cancer
- 73.4% of Wisconsin residents are aware of the health risk associated with radon exposure yet only 22.1% of homeowners with a basement had previously tested their home for radon.[1]
- Wisconsin Cancer Plan 2020-2030: Risk Reduction—Decrease exposure to radon[2]
  - Increase awareness of the connection between radon and cancer risk
  - Increase the testing for and mitigation of radon in homes and other buildings
  - Increase the number of residential buildings built or remodeled using radon reducing methods



Sources:
1. Denu et al., 2019
2. Wisconsin Cancer Plan 2020-2030, 2020 from https://wicancer.org/cancer-plan/interactive/#chapter-2

Field Placement

Wisconsin Department of Health Services

Division of Public Health

Bureau of Environmental and Occupational Health

Wisconsin Radon Program

Proposed Activities

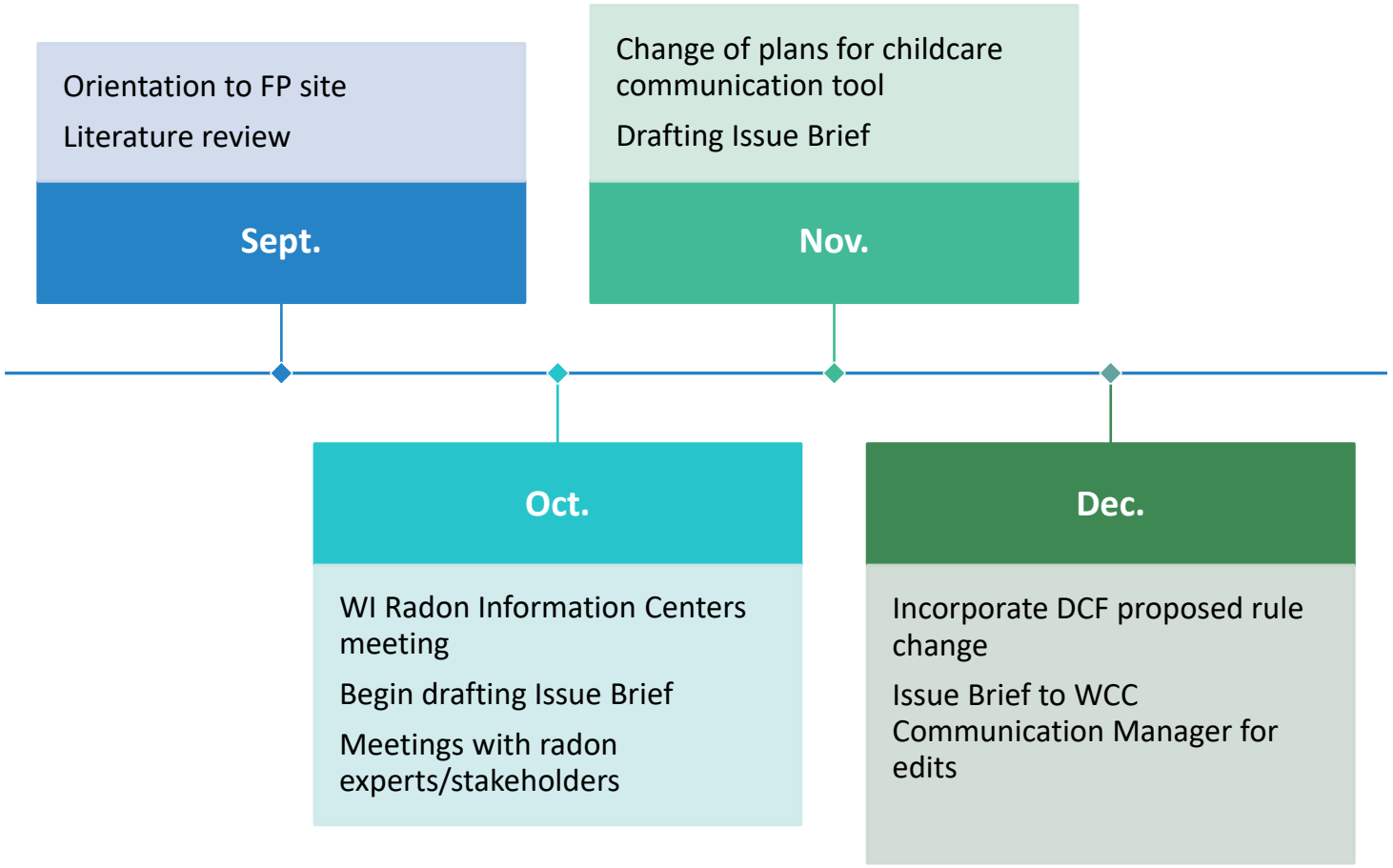
Develop Radon Issue Brief

Develop a communication tool designed for childcare centers

Surprises

- The Department of Children and Families had the opportunity to utilize the rulemaking process to include radon testing and mitigation requirements for licensed childcare.
- This would require a public comment period and a hearing, delaying the timeline.
- DCF has announced their timeline for this proposed rule change in December:
  - Written comments are accepted on or before January 5, 2022
  - Public hearing will be held via Zoom on January 5, 2022, at 1 p.m.

Timeline


Orientation to FP site
Literature review
Sept.
Change of plans for childcare communication tool
Drafting Issue Brief
Nov.
Oct.
WI Radon Information Centers meeting
Begin drafting Issue Brief
Meetings with radon experts/stakeholders
Dec.
Incorporate DCF proposed rule change
Issue Brief to WCC Communication Manager for edits

WISCONSIN Comprehensive Cancer Control Program

CCC Issue Brief

January 2015
Volume 11 Number 1

Lung Cancer Risk and Radon in Wisconsin: The Need for Increased Testing and Improved Reporting

Paul D. Creswell, PhD[1,2,3]; Megan L. Christenson, MS, MPH[1,2,3]; Christy Vogt, MPH, CHES[2,3]; Amy Godecker, PhD[1,4]; Emily A. Reynolds, MPA[1,4]; and Jessica Maloney, BS[2]

[1]University of Wisconsin School of Medicine and Public Health; [2]Wisconsin Environmental Public Health Tracking (EPHT) Program; [3]Wisconsin Bureau of Environmental and Occupational Health; [4]Wisconsin Comprehensive Cancer Control Program

BACKGROUND

Lung cancer is the leading cause of cancer mortality in Wisconsin and throughout the United States. Each year approximately 2,980 people die from lung cancer in Wisconsin[1] while roughly 158,040 deaths from this disease occur nationally.[2] Tobacco smoke is the primary cause of lung cancer cases,[3] but radon is the second leading cause of the disease contributing to thousands of deaths each year.[4] There is an increased lung cancer risk among smokers exposed to radon. Compared with non-smokers, research shows that smokers' likelihood of developing lung cancer increases exponentially with similar levels of radon exposure.[5]

Radon is a naturally, occurring, odorless radioactive gas that arises from bedrock and soil and is a known human carcinogen.[6] Because it is a gas, radon and its decay products can build up in the air of enclosed areas – particularly spaces that are underground such as basements, caves, and mines. When radon gas is inhaled, radioactive alpha particles are released and invisible solids may become lodged in lung tissue.[7] Exposure to radon can disrupt DNA replication at the cellular level which can lead to cancer.[8] While the specific implications of low-level exposure and exposure among non-smokers are not, as yet, fully understood,[8,9] the United States Environmental Protection Agency (EPA) recommends remediation in homes with radon levels at four picocuries per liter (4pCi/L).[8] However, the bulk of the current evidence suggests there is no lower limit of radon exposure which can be considered unequivocally safe.[6,10]

Summary

Background – Lung cancer is the leading cause of cancer mortality in Wisconsin and in the U.S. While the majority of lung cancers are caused by tobacco smoke, radon exposure is the second leading cause of the disease.

Radon Testing and Mitigation in Wisconsin – Local health departments throughout Wisconsin currently provide radon testing kits at low cost to residents. Evidence suggests, however, that testing and mitigation remain low. Moreover, current data reporting systems are inadequate leaving stakeholders with an incomplete picture of Wisconsin's risk.

Policy Implications – Increased testing and reporting would reduce statewide cancer risk and strongly enhance Wisconsin's ability to protect the health of its residents. Some states have found success with legislation that aims to increase testing and awareness of the risks of radon. Even without legislative action, however, informal policies and collaborative efforts between stakeholders could increase testing, improve data collection, and increase appropriate mitigation.

RADON IN WISCONSIN

Like much of the northern United States, the majority of Wisconsin counties have moderate to high potential for indoor radon.[11] Wisconsin has geological features associated with creating relatively high levels of radon, particularly in specific regions. **Figure 1** maps the percentage of tested homes in each Wisconsin zip code that have elevated levels of radon (i.e., levels higher than the EPA's action level of 4pCi/L). The data in the map represent the aggregated results from 131,877 radon tests reported to the Wisconsin Department of Health Services from 1991-2012. The darkest two shades indicate areas of the state where more than half of tested homes have elevated levels of radon. In areas where a higher percentage of homes have elevated radon levels, it is certainly essential that all untested homes be tested. However, it is important to note that radon levels may be high in individual homes in zip codes where the majority of tested homes are below the EPA threshold. Factors such as the age of a home and the result of a neighbor's radon test do not adequately predict the risk of elevated radon. Testing a home is the only way to be certain of the radon level in that particular home. The EPA recommends that all homes be tested for radon every two years.[12]

Caution is warranted in interpreting the data shown in **Figure 1**. The map reflects the results of radon tests that have been conducted using kits provided by the Wisconsin Department of Health Services

Radon Issue Brief

- Published electronically by the Wisconsin Cancer Collaborative
  - Last updated in January 2015
- Audience: cancer control professionals, advocates, policy makers and beyond
- Purpose:
  - Inform readers of the health risk associated with prolonged radon exposure (lung cancer)
  - Update on Wisconsin testing and mitigation efforts
  - Examine radon exposure and lung cancer risk through a health equity lens
  - Review policies (if applicable)
  - Provide case study examples of how local Wisconsin communities have worked to improve radon awareness, testing, and mitigation

Radon & Childcare Centers Communication Plan

- Original Plan:
  - Develop a communication tool to promote radon awareness and encourage voluntary testing and mitigation for state-licensed childcare centers
- Pivot Plan:
  - Develop a communication plan for the WI Radon Program and DCF to utilize in preparation for the proposed rule change adoption in early 2022
  - Purpose:
    - Outline various communication tools that can be used when rule change is finalized
    - Describe stakeholder/audience, objectives, main content, delivery method, and timeline for each tool

Next Steps for Issue Brief—Handoff

Monitor progress of DCF rule change process into early 2022

Promote opportunity to comment and attend hearing to WCC membership (December ENGAGE)

WCC Communication Manager and editorial team are reviewing Radon Issue Brief

Final formatting and layout design with WCC Communication Manager

Publication goal: Early 2022

Develop outreach strategy to promote the new resource within WCC membership

ENGAGE newsletter article

Supplemental resources for priority populations within WCC membership (ex: primary care providers)