NIEHS Office of Human Research Compliance

Women's Health Awareness Podcast Series

Episode #1: Radon

Rose Hoban:
Welcome to the Women's Health Awareness Podcast Series from the NIEHS Office of Human Research Compliance. I'm Rose Hoban. Our first podcast addresses a topic you might not think of as a women's health issue, but in many ways, it is exactly that. It's about a substance called radon. Radon as a colorless odorless, tasteless, and chemically non-reactive radioactive gas. It's formed by the natural radioactive decay of uranium in rock soil and water. It's the leading environmental cause of lung cancer in the United States, accounting for approximately 21,000 lung cancer deaths per year exceeded only by tobacco smoking. Our guest for this podcast is certainly an expert on radon and the many issues surrounding it. He is Phillip Gibson, Program Coordinator for the North Carolina Radon Program, part of the North Carolina Radiation Protection Section of the state's Department of Health and Human Services. Phillip, thanks for joining us to explore this important problem.

Phillip Gibson:
Rose, thank you so much. I do appreciate this opportunity that NIEHS is providing. Our engagement with the Women's Wellness event over the past eight years has been a true benefit for our program and hopefully the women who have participated.

Rose Hoban:
First off, where does radon come from and why does it constitute such a danger to human health?

Phillip Gibson:
This issue is something that everyone should be concerned about, not just women. Radon is the leading environmental cause of lung cancer in the United States attributing to roughly 432 deaths every year in North Carolina, and 21,000 deaths, approximately, as you mentioned for the United States. Where does radon come from? It is the natural decay of uranium. There is radon in all rock and soil throughout the entire world. And because it takes millions of years for uranium to decay, we don't know where radon is occurring in high levels. It's a radioactive gas. And then when we breathe in high levels of radon, that contact of the radon in our lungs can start creating damage to the tissue, to the DNA. And then when the DNA tries to heal itself and it does so improperly, that's where cancer comes from. Radon releases radioactive particles that our buildings then collect, because all buildings are like vacuums. You may have experienced drafts in your home. So air is being brought in and radon is being brought in at some level. So it's

not a matter of, do you have radon? It's a matter of how much radon do you have in your building? So we have this process, this natural process of radon coming out of the ground, entering into our homes. It's increasing in terms of the amount of radon in the home, and then we're exposed to it. We're breathing it in. So that's why it's a danger to our health.

Rose Hoban:
So where is radon typically found in North Carolina? Is it more prevalent in any particular geographic area?

Phillip Gibson:
Well, there are certainly places in North Carolina that have historically been places where elevated radon levels may occur in homes because of the natural geology, but what we do today and have done for quite some time is we quarry rock and we make concrete out of it. And so there are high rise buildings that have concrete as a main building material. And so now you have condominiums in Charlotte, in Raleigh, in the coastal region of North Carolina, that may actually have elevated radon levels. So it's no longer just, oh, it's in Western North Carolina. It is now all over the state.

Rose Hoban:
Does it tend to be more prevalent in lower income areas where homes may not be as well constructed or maintained, or is it maybe more prevalent in rental properties?

Phillip Gibson:
Any home can have an unhealthy level of radon. There are homes that may be very drafty. And as a result, the radon level may be diluted from those drafts. There are brand new homes that are built that have a very tight envelope, they say, or they're made to be energy efficient. So there's less drafts coming in and out. And in those homes, you can still have elevated radon levels. It doesn't help with your energy bill if you have a lot of drafts, but it may actually decrease the amount of radon concentration in your home. The Centers for Disease Control and Prevention created a map for the whole country. And so you can hone in on North Carolina and see that there's elevated radon levels throughout the entire state of North Carolina.

Rose Hoban:
That's really fascinating. So, you know, this is a women's health podcast and it begs the question. Are women more vulnerable to its adverse effects than others? Are they more likely to develop lung cancer stemming from exposure to radon? And you know, what about single moms or are any other groups especially vulnerable, say children or folks who are immunocompromised?

Phillip Gibson:
I don't know if women are more vulnerable to lung cancer, which would be the broader way of looking at it. I would say that this is probably a question best suited for an oncologist. Here's what we know: everyone's lungs are susceptible to lung cancer and there is a risk for radon-induced lung cancer. If you're exposed to high levels of radon over a long period of time, people who spend more time in the homes with high levels of radon are more susceptible to the effects of radon, right? So the longer you live in a high radon home, and the more time you spend there, the greater the chances of developing lung cancer.

Rose Hoban:
Got it, got it. Let me ask you a question. Is radon an environmental justice issue? And if so, how's that?

Phillip Gibson:
What does exist in terms of a justice issue is the inability for some people to afford fixing or lowering the radon level in their home. And mainly due to low income. The average cost for radon mitigation and having a system installed in your home is about $1,500.

Rose Hoban:
That's not insignificant.

Phillip Gibson:
It's not insignificant. You know, I recognized this early on in this position and began looking at trying to find ways to assist those individuals or families, homeowners, with this financing problem. There are now financing options for some homeowners, should they meet the financial criteria. For example, the North Carolina Housing Finance Agency supports local organizations that do home repairs, weatherization work, maybe installing a ramp, et cetera. They also support financially the inclusion of radon mitigation systems. So for those who are in economic poverty, if you meet this financial criteria, there are funds, grant funds that will pay for a radon mitigation system in your home. Self-Help Credit Union of North Carolina also has a simple interest loan program now, specifically focused on helping those who may not be in poverty, but still need financial assistance. I also want to point out some great work that's happening that's the first that I know of in the country, with a program called System Vision. System Vision is a program of advanced energy in North Carolina, and System Vision is assisting affordable housing groups in North Carolina, such as Habitat for Humanity and others, with proactively installing passive radon mitigation systems in the new homes being built by those participating affordable housing groups. So there's a lot of work around equity in North Carolina.

Rose Hoban:
Wow, there's a lot going on in North Carolina. I'm guessing there's also things happening across the country. Do you have, from your vantage point in North Carolina's Department of Health and Human Services, do you have a sense as to what's happening across the country?

Phillip Gibson:
Absolutely. I once served on the E25 Committee, which is the national committee around radon, with my peers. So other state government programs, every state and tribe for that matter in the United States has a radon program at some level. We all work together in terms of transferring ideas. We also work with the industry with understanding what are the best techniques. So there are actually standards in which we all work to advocate for in our respective states. Some states have requirements, they have laws, they even have certification programs for those who are testing and mitigating in their states. So there's a variety of work, if you will, that's going on advocating education. We all work in terms of a region. So there's the Southeast region and the Environmental Protection Agency coordinates a monthly meeting online in which we all in the Southeast communicate what we're doing each month and sharing ideas.

Rose Hoban:
Wow. That's really interesting. That's great. So, you know, your mission is to have every home in North Carolina tested for radon. How do you go about doing that?

Phillip Gibson:
We have to empower homeowners with the information on how to test their homes for radon. Radon in North Carolina as an issue has no laws, no rules, no regulations. So we are strictly an educational program, empowering homeowners and other groups that reach homeowners on how to test, making testing accessible, and we educate folks on how to fix their home. We're encouraging radon resistant, new construction techniques for homes that are being built in North Carolina. So our hope is that builders not just of affordable housing, but any homes, look at going ahead and installing a radon mitigation system when they build a new home. And we develop coalitions, partnerships with whomever will work with us. For example, the Women's Wellness event, that's an outreach effort. There's Duke Cancer Institute, there's the National African American Tobacco Prevention Network, the Lung Cancer Initiative of North Carolina, a number of different groups. and even the Cancer Control Plan in North Carolina has made radon-induced lung cancer a priority issue. So through all of that, we're developing partnerships and relationships. The group that actually reaches more home hunters than any other, it seems is the real estate agent or broker in North Carolina. Beginning in January of 2021, we are offering through real estate schools in North Carolina a four-hour CE course for real estate brokers on what is radon, how to test for radon,

mitigation. There's over 100,000 real estate brokers in North Carolina from the coast to the mountains so that we see them as partners in making this happen.

Rose Hoban:
So, you know, we've talked about this, but the question comes to me. What happens if your home tests positive for the presence of radon? Like how do you get this out of your home?

Phillip Gibson:
Earlier I mentioned that our homes are like vacuums, drawing in gases. And what we have to do in order to lower the level is to do one of two things. One is to prevent as much radon from entering a home as possible. So where your plumbing comes into your home, there may be a void around that pipe or the electrical lines. There may be a void around that. So we can seal those in, we can look at where joints, where your wall and floor come together, all those openings are then sealed. Having a crawl space may mean that you would need to have some kind of what we call a vapor barrier or a plastic sheeting that would help prevent radon from emanating from the ground and being drawn into your home. So prevention. And then the second treatment option is hooking up what is called an active depressurization system, but really what that is, it's a vacuum, it's a fan hooked up to a PVC pipe that is drawing the gases out from underneath your home and discharging them or blowing them above your rooftop before it can actually be drawn into your home by your home being a natural vacuum.

Rose Hoban:
So Phillip your office is offering free radon kits in association with the NIEHS Office of Human Research Compliance. Can you tell me a little bit more about that?

Phillip Gibson:
NIEHS has been an organizer of the Women's Wellness events over the past seven years plus, and we've been fortunate to be a vendor at that event for the past seven years or so. We have been able to meet with women personally one-on-one and communicate about radon-induced lung cancer as well as to give them a free radon test kit at those events. But of course [the] COVID-19 pandemic has prevented the events from taking place as well as, of course, us meeting with women one-on-one. So this year we're able to offer North Carolinians a free radon test kit through the N I E H S Women's Health Awareness website. Their web address is www.NIEHS.NIH.gov/womenshealthawareness. The supply is limited to 3000 free test kits starting in January, 2021. So you should access the website and request your free radon test kit quickly. Again, that web address is www.NIEHS.NIH.gov/womenshealthawareness.

Rose Hoban:
I can imagine that COVID has restricted your ability to meet people in person. What about in other states? And what if you exhaust your radon test kits?

Phillip Gibson:
What people can do is purchase a radon test kit. They retail around $17, just under $20. And so you could go to your local hardware store and purchase a test kit. States across the country will have their own link on their own website, their state program website. You know, I do recommend that if folks want to find their state program, you can go to SOSradon.org. There's also a lot of information and videos and such there. And then SOSradon.org actually has a way for you to order a test kit. You can purchase a test kit through their website if your hardware store doesn't sell them.

Rose Hoban:
Well, you know, January is Radon Awareness Month. Is there a best time of year for testing? Is that why January is the month?

Phillip Gibson:
Well, the best time to test is anytime. We hope that folks will test their homes, but in the winter time we typically have our windows and doors closed. And that's the condition in which we want folks to test. It's easier for folks to test in January because they have their windows and doors closed. You need to have your home closed for a number of hours before you test. And your testing will usually occur at a minimum of three days up to seven days.

Rose Hoban:
So what about prevention, Phillip? Should every home be outfitted with a radon detector, like everyone has a smoke detector?

Phillip Gibson:
You don't need a detector. You need to just simply test every two years with a short-term test kit to see if your radon level is elevated. We recommend, folks, that if you find that you do have a high level of radon in your home with the test kit, to just call me, and then I will help you understand the next steps for how to deal with the elevated radon level.

Rose Hoban:
And I'm guessing there's someone like you in most every state, right?

Phillip Gibson:
There is, absolutely. And you know, folks can call me if they can't find their other state person, I probably know them and can help them find their person.

Rose Hoban:
Well, Phillip, thank you for that generous offer for our listeners. And thanks for joining us for this inaugural Women's Health Awareness Podcast episode. Best of luck with your quest to eliminate radon contamination in North Carolina.

Phillip Gibson:
Thanks for the opportunity.

Rose Hoban:
It was a pleasure. Join us for our next Women's Health Awareness Podcast from the NIEHS Office of Human Research Compliance. Our next topic will be immunizations and the COVID-19 vaccine. I'm Rose Hoban. Thanks for listening.

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