Minimizing Indoor Air Pollutan.... Katherine Carvlin Transcript

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SPEAKERS

Dr. Katherine Carvlin, Kendra Seymour

K **Kendra Seymour** 00:04

Hello everyone, and welcome back to another Change the Air Foundation interview. My name is Kendra Seymour and I'm joined today by a very special guest who's going to be talking to us about our indoor air quality. I'd like you to meet Dr. Katherine Carvlin. Excuse me. Thanks so much for being here.

D **Dr. Katherine Carvlin** 00:21

Thanks for having me.

K **Kendra Seymour** 00:23

Now, for those who don't know her yet, I want to tell you just a bit about her background. She's a practicing naturopathic primary care at the Institute of Complementary Medicine in Seattle, Washington. She specializes in helping patients to get to the root cause of environmentally acquired illnesses such as mold illness, metal toxicity, multiple chemical sensitivity, autoimmune disease, infertility, and complex digestive issues. Dr. Carvlin holds a bachelor's degree in psychology, a master's degree in holistic nutrition and a doctorate degree in naturopathic medicine. She completed a postdoctoral residency at Bastyr University where she now teaches aspiring MD students how the environment impacts health, to further promote awareness of environmental medicine. Dr. Carvlin serves as the president of the National Association of Environmental Medicine, working alongside Environmental medicine leaders to educate clinicians, and increase public awareness. I absolutely love what you're doing. I think it is so needed, and it's something that I think more people, you know, could benefit from the knowledge and expertise that you're bringing. So I'm so glad that, you know, we're gonna be talking about this today.

D Dr. Katherine Carvlin 01:32

Yeah, I'm looking forward to it.

K Kendra Seymour 01:34

Oh, I love it. And I know we kind of talked before and we have so much good information. So we're gonna do our best to get through all of it in the time, but I know at the end, you'll give us some, you know, resources where people can go if they have follow up questions or to get into contact with you. But let's, let's start at the beginning. What are some common, you know, pollutants in our air that people need to be thinking about, that maybe they're not?

01:58

Yeah, so there's really four main categories of air contaminants, which include both indoor and outdoor pollutants. So the first is like the particulates themselves...thinking about car exhaust smoke from wildfires and tobacco, biological contaminants, like mold spores and other allergens, and even rubber from the breakdown of tires. Next, we have the group of gases. So ozone, carbon monoxide, nitrogen dioxides, all of those things that come from traffic pollution. And we have radon, which is a an odorless gas that is produced by the decay of uranium in the soil and water. We have water disinfection byproducts that volatilize you know, especially in showers and bathrooms. And then we have mycotoxins right, which I like to think of and lump into the category of gases because they're so tiny, and they behave like gases. And then we have the air toxics. And those are things like persistent organic pollutants, like flame retardants, dioxins, organochlorine, pesticides. We have asbestos that comes from like those older buildings, anything like toxic metals, you know, coal factories release mercury (thinking about factories and industry). Then we have hydrocarbons that are like gasoline, coal, charcoal, natural gases. And those react with other gases like nitrogen oxides and can make ozone. We have herbicides, we have solvents, formaldehyde, just so many different chemicals that could be in our air. And then we also have a newer toxicant that I like to consider an air pollutant: electromagnetic radiation (which I think we'll touch on a little bit later). And so there's lots of these different toxins. You know, not everyone has the same amount of exposure, right? If you live in an urban area, you're more likely to be exposed to diesel and those traffic gases. Versus if you live in a rural or agricultural area, maybe you have more pesticide exposure. Or if you live near a factory, of course, that puts you more at risk for those specific chemicals, you know, in that factory.

K Kendra Seymour 04:14

Yeah, I think there's a lot to think about there. I think we tend to think about, you know, wildfire smoke, or those smoggy days you see pictures of like certain cities where it's more heavily polluted. And you think, "Oh, I can see that. That's that". But really, so many of these things you're talking about are so small, that we can't see them. They're odorless, often colorless, they're invisible to the naked eye. And so it's almost an out of sight, out of mind kind of thing. Which means that they're overlooked and they're dismissed, as you know, causes or factors

that are going to make conditions, you know, health conditions worse. And that's really hard to get people to wrap their mind around that this thing they can't see could be impacting their health.

04:59

Yeah, exactly. It's a constant. And, you know, organizations like yours are promoting awareness. And you know, that's really the first step, is just educating people and saying, "Hey, look, these are, you know, real, they're in your day to day life. Like, we can test for them, we can look for them. And there are solutions". So, which is the important part. I know, I was like, that was a whole laundry list. But the good news is, there are daily steps that we can take to significantly reduce our exposures.

K Kendra Seymour 05:29

I love that. And we're definitely gonna get to, I think some of those tips that you have for us. I think, too, you know, for anyone listening in, I feel like I say this all the time. But the stat is just so shocking that the average person spends more than 90% of their time indoors. So you know, I hit the 40 milestone not too long ago. And I think that equates to like 36 years of my life indoors. And so I want to make sure that the air that I'm breathing, that the air that everyone is breathing, is safe. So let's talk about then, like, who is impacted by these indoor pollutants? Are certain individuals or groups more at risk? What can you tell us about that?

D Dr. Katherine Carvlin 06:08

Yeah, so I mean, like, you're right, like 90% of people spend 90% of their time indoors, and in sensitive groups, like the young and older adults, often spend even more than that indoors. And people with like chronic respiratory or cardiovascular diseases, and they're more sensitive, they're more impacted by these air pollutants. And then just frankly, like, you know, the American Lung Association sent out a report in a couple of years ago, and that 40% of the US population lives in an area with poor air quality. So you know, it's not an underwhelming amount, right, like, almost half of us are impacted. And the W.H.O. estimates that both indoor and outdoor pollution contributes to the premature death of over 7 million people every year. You know, pneumonia, stroke, heart disease, COPD, lung cancer, right, like air pollution is a critical risk factor for these conditions and death from those conditions. So it is a big concern. And the more time we spend indoors, the newer building techniques that we have, right, like have increased concentrations of indoor pollutants. We use more synthetic building materials. And we have tighter homes, which is, you know, better for efficiency, and can be better in cases like wildfire, smoke events, but between that and the furnishings, your personal care products, household chemicals that you're using, and keeping and storing indoors, with no way for your house to breathe and exchange air, it increases our indoor air pollution.

K Kendra Seymour 07:53

Yeah, I mean, I think some have dubbed us the, you know, the indoor generation for a reason because now we're, you know, we're indoors, we're not bringing in fresh air, we're not filtering the air very efficiently in our homes. And then so we buy like plugins and candles and air

the air very efficiently in our homes. And then so we buy like plugins and candles and air fresheners. And we make our homes smell better by adding one coat to cover up another odor. And you know, I've even heard it said that VOCs, which you know, off-gases from a lot of your building materials, your furniture, and flooring and stuff, is like the new secondhand smoke. And when you know, I grew up in the 80s, I remember walking into restaurants and buildings and people smoking, and coming home and just smelling like that. And that's very noticeable. But when you're talking about some of these things that don't always have an odor, again, you're not thinking about it. It's not on your radar. And so I'm glad we're having this conversation then. So it sounds like really, you know, this is an everyone problem. You know, whether you're young or you're old, there's going to be some more groups that spend more time indoors that maybe you're going to be more susceptible than others but it's definitely something that you know, all of us need to be thinking about. Yes, exactly. So let's talk then, let's let's talk indoors a little bit more. You know, for where we are in the world, like it's fall and winter is coming and you know, people are thinking oh fireplaces, and then that makes me think about our stoves and gas appliances. And those can impact our indoor air quality. But can you tell us about that?

D Dr. Katherine Carvlin 09:29

Yeah, so gas appliances, things like space heaters, stoves and ovens, fireplaces, furnaces, water heaters and dryers right all of these appliances can release nitrogen dioxide and carbon monoxide into our air. And the regulations for how well, or what needs to be vented or not vented are pretty poor. California has some better ventilation requirements for the gas appliances but you know if your stove does not have a vent that goes, you know, not just like filtered, but like up and out through your house, you are being exposed every time you cook, right, which is frequently. And those ventilations are really important for reducing, you know, those exposures to nitrogen dioxide and carbon monoxide. And then even when if you do have a vent, you know, a filter, like if it just vents, your stove specifically relays the vents to your, you know, just kind of above your your stove area. And it has a filter in it, that works about 30% efficiency. So not a whole lot, but better than nothing. And then it also depends on like how hot your burner is, you know, is it all the way hot? Is it just simmering, and then back burners are better than using front burners. If you have a gas stove, we're talking about gas stoves here because the back burner, the fumes come up through the filter and out the vent right before they get to you. And so those end up being more efficient. So I cook with using my back burners as much as possible, because of that, and so that, you know, we'll talk about that. But there's a little teaser of like more more daily lifestyle routines that you can do to reduce your exposure. There's some research that fire places that are unvented can lead to toxicities from these harmful chemicals within just a few hours. Right. And so if you have an unvented gas fireplace that you're using, while you're cooking, and you have children at home, even if those children have asthma or other respiratory issues, if they're sick, you know, you want to sit by the fire. Those all predispose you for exacerbations for your chronic health issues, you know, like COPD, and then even put you more at risk for developing respiratory infections just from that inflammation from those exposures.

K Kendra Seymour 12:06

Yeah, I mean, those are all really good things to think about. And I love your little tip about the back burner, because you'd be amazed. I'm surprised they even have like oven vents where you don't have some sort of ventilation. And the other thing is people, like you have to turn it

on. Like I know, it seems like one of those things like people do and run it during cooking and even for a little bit after

D Dr. Katherine Carvlin 12:26

Put it on high, you know, yeah, see?

K Kendra Seymour 12:29

Yeah. And I always laugh when I see those ones, like, where are they? It's usually the microwave above and it just blows the air back at you. I'm like, No, you want it venting outside, you want to make sure it's in good working order. And, you know, you mentioned it's funny, the filters, I pop mine off and clean. A little tip people, you need to be cleaning those. And it's really just like a metal mesh, which I mean, that's not really catching large particles. It's gonna catch like the oils and some of the stuff that comes up from you know, your boiling water or whatever you're doing. But always to be sure that you know, that you're maintaining it. I love the backburner tip, because I know, you kind of alluded to carbon monoxide for a moment. So let's let's pivot there for a second. Can you tell us about that? Because people think oh, well, I have my carbon monoxide detector on the wall. Like is that enough? What do people need to be thinking about?

D Dr. Katherine Carvlin 13:21

Yeah, so it's often not enough. Your gas appliances can release carbon monoxide, especially your furnace, like your gas powered furnace. And if your furnace is installed incorrectly, doesn't have the proper venting outside. And you know, depending on where your furnace is, the carbon monoxide can build up and come through the vents in your HVAC system and enter your home. And depending on where your detectors are a lot of them you know, people just say oh, I have a carbon monoxide detector, like ingrained with my fire detector on the ceiling. But you need to have them kind of lower down on the ground to pick up, especially if you're concerned about you know, getting your furnace maintained and maintenance making sure they can check. You know, when they come and service your furnace, they can check to make sure that the carbon monoxide is at low or undetectable levels. But having those meters in your house is another layer of protection that you can have. Because yeah, carbon monoxide, you don't smell it, you know, you don't notice that. Fatigue and like neurological symptoms, headaches are some of the first signs. And it's a very deadly, potentially even deadly toxin and really important to be aware of and make sure that your home is safe.

K Kendra Seymour 14:49

Yeah, especially you know, sometimes you hear stories in the winter, people will lose power and then they rely on like generators and things like that. Those are always things to be aware of. But I think one of the things that people need to be thinking about too is even if you have, you probably had a regular carbon monoxide detector on your wall. And that's great when that goes off. That means the levels are like, so high immediate danger, you're at risk of death, like you need to get out, you call the fire department or whatever. But I have worked with people

who, and I have them in my own homes, they're aerated for low level carbon monoxide exposure, and that's a separate monitor. And you can get them for like $100. But you know, there's different kinds online. And that's because it's more often, you know, those low level leaks that are subtle, it's not enough to trip your regular carbon monoxide detector, but it can cause problems. And I've talked with people who were like, "Oh, we're not getting better." And they remediated the areas, and we mentioned the stove. And it turns out, you know, they called the gas company, and they found a low level leak, and once they fix that, their headaches went away. And so it's about keep asking questions and things like that. So a low level rated carbon monoxide detector could be a smart addition for somebody listening.

D Dr. Katherine Carvlin 16:05

Yeah totally.

K Kendra Seymour 16:06

Now, we kind of talked on this before. We live in this high tech world, wireless, and what are some, like, high level stuff (because this could be many episodes on its own), that people need to be aware of when it comes to EMF? Well, what are EMF? So talk to us about all that.

D Dr. Katherine Carvlin 16:22

Sure, sure. So EMF, right electromagnetic fields. And we're talking about like this non ionizing radiation, right, so not X rays, or CT scans. Just as non ionizing lower grade form that comes from things like our Wi Fi, our cell phones, bluetooth devices, earbuds, you know, the wireless earbuds, any of those wireless devices, even our microwaves make EMFs. And so, right, virtually everybody has a cell phone these days. And unlike a microwave, which is contained in a box, and you don't use it very much, you know, it's only on when it's on a cell phone that you'd have, you know, next to you all the time, right, and it's these pulsed irregular signals that rapidly change the electric and magnetic fields, you know, receiving signals from the satellites. And so these irregular pulsed wavelengths are really disruptive to us into our nervous system, right? Like we are electromagnetic beings, right? That's why laser and infrared sauna and ultrasound...like all of these, both medical uses and health and just the techniques that we have work for us. And a pacemaker, right, like our hearts are electrical. And that's how our nervous system works. We're firing action potentials based on electrical currents and frequencies. And so we are affected by the fields around us. And the cell phone, the pulsing of phones, especially. And then I just want to focus on cell phones like thinking higher level, right like, and it's a big impact for us. Like the regulations from cell phones are very out of date. Like they're from the 1990s. They only looked at like thermal effects where you, you know, heating up the phone and the cells tissues, but we know that there are non thermal effects on body cells and tissues and organs that aren't being accounted for. And so like in these regulations, they're back from the 90s, they use a mannequin filled with like plastic to simulate the human body. It's like a 220 pound man with an 11 pound head. Right? So it's like, a huge person. Doesn't account for children and women and people of different body sizes, and it only looked at a cell phone for like, a few minutes, right, like people have their phones like glued to them all the time, you know, all day long, they're on their phones all day long. And so we just don't have regulations that are in line with current practices. So that's a, you know, a disadvantage there.

And then, you know, the EMF safety is pretty controversial. The IARC, you know, part of the W.H.O. labels EMFs as a Class 2B toxin, which means that it's potentially carcinogenic to humans. And so, you know, it's controversial, right? Of course, in the age of 5G and Internet of Things, everyone wants everything wireless and smart and updated. And that's better for us in our communities, but we're being more inundated with all of these exposures. And you know, the other tricky thing is that not everyone responds to EMFs in the same way. Some people are more sensitive than others, you know, people with chronic health issues, mold exposure, other chronic infections that they seem to be more sensitive to the EMF exposures. And what research has showed is that EMFs drive oxidative stress. So oxidation leads to inflammation. It can affect us all, you know, throughout our bodies, but our immune systems and our neurological systems are mostly impacted. We also see EMF exposure tied to reproductive concerns. So they're linked with lowering hormone levels, increase oxidative damage to the uterus and the testes, right. So egg and sperm quality are reduced, which can lead to infertility issues as well. And then because the nervous system is impacted, anxiety, ADHD, depression, all of these mental health conditions can also be impacted. And so it's really not insignificant, it's a huge exposure that we have on a day to day basis. And, but something that we do have the power to modify and control as well.

K Kendra Seymour 21:05

Yeah, I heard just this morning actually, a really interesting stat, that the average person looks at their phone 80 times a day. And if that's something that has potential to impact your health, you know, maybe you're thinking differently, but I wonder for a moment, again, without not getting into to a whole dissertation, are there some, like tips just off the top of your head that people could do to kind of be more conscious or reduce, you know, EMF exposure?

D Dr. Katherine Carvlin 21:33

Sure, so there's lots of tips. The first one is that you can put your phone in airplane mode at night, you know, that's like easy. So everybody should be doing that. You don't need your phone. You know, or if you are, you know, a mom and have a kid in college or something, you need to have your phone on and be accessible, you can put it in a different room, you can leave your phone in airplane mode, when you are not using it. You can use wired headphones. They make some that are called like blue tube where it reduces the EMF exposure like away from your body, right? Like distance is your friend. You want to be away from that, you don't want to be sleeping adjacent to your smart meter on your house. You know, remove your smart meter. Or, you know, what can you do to not have that by a bedroom or get that bed as far you know, away from that wall as possible, the greater distance you have from these wireless devices, the better. So those are some of the like really big high level ones. You can connect your computer to an Ethernet cable and turn your Wi Fi off. Don't forget, you have to turn the Wi Fi off like on the computer itself as well. And have everything wired, like don't use a wireless mouse or wireless keyboard or printer. Earbuds are a huge one, everybody has wireless earbuds these days. Using a wired headset is better, wired baby monitors, like anything that you could get wireless, don't. Get them in the wired version. And those are some really higher level ones. There are much more, you know, techniques that people can do depending on their sensitivity. You know, there's like bed canopies. There's paint, there's other mitigation treatments that you can do. There's electricity, dirty electricity monitors that you can find and EMF meters that you

can get to really hunt down your sources of exposure and make sure you're mitigating those. So yeah, I think the biggest thing is really distance and trying to not use wireless devices as much as possible.

K Kendra Seymour 23:50

And I think people sometimes think ,"Well, those are small changes, they can't really make that big of a difference." But never underestimate the power of some of those small changes, they can add up over time. And for anyone listening, if you go to ChangeTheAirFoundation.org and click on our summit tab, we actually have two great talks that focus on EMFs from some of the leading experts. So you can check those out for a little bit more information on that. But that's really good to think about. It's another example of something we're not seeing, and so again, we're not thinking about it. Now, I know this summer, I'm in the Northern Virginia area, and we were impacted by the wildfire smoke from Canada. And I mean, so much so to the point that you know, events were canceled and pools were closed and things like that. So I wonder if we couldn't talk for a minute about, you know, that outdoor air quality. People think well, I'll just go indoors, but really, you know, I think there is something like up to 50% of the pollution outdoors can make its way into your home. Talk to us about wildfire smoke, because we've seen a lot more of that over the last few years, and how does that impact our health? What can you do about it?

D Dr. Katherine Carvlin 24:55

Yeah, sure. It's a huge issue, right? Wildfires are on the rise. Right? In fact, the forest area that's burned by wildfires has increased drastically since the 1980s due to climate change, and so the area's burned by wildfires across the US and in Canada is about twice what it would have burned without climate change. So this is a relatively newer type of air pollution for us and more of us are becoming more aware, as I think, you know. I'm in Seattle on the West Coast, and we've become more aware. But now the East Coast this past summer is more in tune with it now that it's impacted them as well, because it's it's a global issue. And even if the fires are way up in Canada, they affect, you know, us down here and like all over the country, and those plumes were going even across to Europe. So it's definitely a global issue. And wildfires especially are toxic. The particulate matter, the trees are, there's extra carbon in the air pollution. And so that generates more free radicals that causes more inflammation in our bodies, more oxidative damage to our lungs. And then not only are trees burning, but there's often cities, you know, when cities burn down. Think of like everything in your house that's toxic. The plastic, the metals, the cleaning chemicals, the pesticides, electronics, wiring, you know, building materials, furniture, and paint, like all of these are volatilizing. They're going into the air and are smoke and we're breathing it in. It's settling back down, you know, the ashes falling on our fields, or agricultural fields, getting into the plants that we eat, you know, it's a not just an acute issue. I mean, there's definitely acute issues, but there's also long term toxicity issues that we need to be aware of. And so yeah, the wildfire smoke can be especially toxic compared to just regular, you know, traffic pollution, for example. And then we can have both acute and chronic health effects, right. So acute, you think of, you know, like headaches, allergy type symptoms, irritation in your mouth, and your eyes and your throat. And then we see lots of increases in cardiovascular and respiratory events, lots more hospitalizations happen, you're more likely to have a heart attack or a stroke or an asthma attack, especially if you have those underlying conditions. And then the chronic health effects, you know, I think

we're still unraveling all of those, but we see associations with cancer, big body systems, our reproductive system, our immune and neurological systems can all be impacted. And really, you know, the bottom line is the air pollution causes oxidative damage, it causes inflammation, and any health condition that you have can be exacerbated from these exposures. And then there's like mental health concerns that we need to think about as well. Like, if you're stuck inside for weeks and weeks, like think about the people that live in Canada, you know. From May until like October, they've been inside and not able to breathe fresh air, or as fresh as they want it to be. And that's a huge mental health aspect too. People become isolated, they can't exercise, they can't access healthy foods. So there's a lot of compounding long term effects that we see with these wildfire events. Yeah,

K Kendra Seymour 28:44

Yeah, you know, and I think this is one of those things to where it's, uh, I think a lot of people, you know, at least in our area, started thinking too like, "Oh, like should I be, should I be like filtering my air? Like, when was the last time I changed my HVAC filter?" By the way, you need to be doing that at least twice a year, more often than not actually. And you know, if you have stand alone air purifier units, those can assist too but good HEPA filtration, you know, can be a good start and we have some resources at Change The Air Foundation if people want more. But is there any like tidbits you have for people who might be in an area that is, you know, sometimes impacted by wildfire smoke? Things that they can do?

D Dr. Katherine Carvlin 29:31

Oh yes, I have lots to say because there's so much we can do to improve our indoor air quality. The first thing you want to do is know what your current air quality is. And so the the EPA has an app that you can download for your phone or look at it on their website. They have a map as well. So www.airnow.gov or https://fire.airnow.gov for the maps, and so that's more national. It's more of a like a 24 hour average. So it's not like the exact,immediate, "What is my right now air quality right next to me?". But it is good, and then they do predict like, what's it going to be over the next couple of days. So it's a really good tool to use. The next website that I direct people to is a network of community air monitors, for some more granularity of detail. And some more precision, especially if you live in a rural area that's not next to a government monitored air area, those monitors are 10s of 1000s of dollars, versus the PurpleAirs are a couple 100. And so you can have a lot more of them. They're less accurate, because they're not 10s of 1000s of dollars, but they do calibrate them. And so, www2.purpleair.com is the website that you could go to for all these community sensors. It's a global company. So you can get really close to like, if your neighbor has one or you have one, what is it right here in your house right now or near you. And you can look all over the world too. So that's kind of fun. And then on the map in the upper upper left, you can toggle on EPA calibration, turn that on, because some people complain like "What? Well that doesn't match the air now" or like "All these other websites that I use, they're not all the same". And it's true, they do use different technologies. And so it's important to calibrate them. And so there's a way to do that. So that's two resources for how to find out what your air quality is. And then once you know it's like okay, yes it's horrible outside or you don't want to go outside, if you want can filter your air, right? So if you have a HVAC system, definitely use a HEPA or even like a MERV 13 or MERV 16 filter. Those clean really well. Get that going. And this is one of those benefits if you do have a newer tight house. It works a lot better, the HVAC system, at cleaning your air because it's not pulling in,

you know, from a leak in your home. You can have indoor air purifiers in each room you know, standalone units, make sure those are clean, you know, clean filters to begin with. If it's a really bad fire event, change them afterwards, you know, look at how dirty they are, keep those clean and do it so that they're functioning the best. You want to you know, take your shoes off before you come in your home, so you're not tracking in pesticides and oils and chemicals outside. I want to really make sure that you know if you don't have an air purifier in your home, you can make your own box filter fans. Those are really affordable options using like a furnace filter that you taped to a box fan. Those have been shown to substantially reduce particulates. They're not great like forever and ever, you know, a HEPA filter is best, but that's a good lower cost option and can really make a difference for people in these acute events. Stay inside, don't exercise outside, and often don't (if it's really bad) don't exercise indoors either. You know just take a break from that, and then if you do need to go outside a surgical mask is not going to be helpful. You need a tight N-95 mask right that is fully on your face. Anything with gaps in it is going to be less efficient. And then ultimately, if it's really bad, you need like a respirator type mask from like 3M. They make those with the filters on the sides. You can get them, there's some rated filters for both solvents and gases that really cover all of the toxins you would be exposed to in a wildfire event. And then things like yeah, don't be burning candles and vacuuming. Don't vacuum because that picks up dust. Like, try to increase your indoor air quality. I'm sorry, improve you know your indoor air quality. Don't add new toxicants while it's a wildfire event.

K **Kendra Seymour** 34:36

Yeah, just a side note on vacuums, because it's one of those things I tend to nerd out on a little bit for you know, getting a good not only HEPA filtered but like a sealed system one because vacuums can be leaky. So yes, the HEPA filter is great, but air leaks around. You can Google online and see videos of people that do like smoke tests and you can see the smoke coming out like the sides of the vacuum and everywhere else. And so when you're purchasing a vacuum the next time, you have to do that. Not only one with a HEPA filter, but one that's a sealed system because you definitely don't want that wildfire smoke being kicked back up into your environment. Well, those are some great tips. And I always like to ask as we kind of wrap up here, like, what are some things that you personally do in your home to improve indoor air quality?

D **Dr. Katherine Carvlin** 35:29

All the above? Yeah, like I have a MERV 16 filter on my HVAC system. I get that maintained and tested regularly. I have individual HEPA filters in my room, the rooms of our bedrooms, especially in main areas, living areas. We take our shoes off, I use the back burners, I don't use any fragrance anything, all natural cleaning supplies and personal care products. We reduce plastic exposures as much as possible in our house. Yeah, really just I open windows on good air quality days trying to get good circulation. And I'm one of those people that just likes to have that open air. I grew up in Southern California and just yeah, I like the breeze. And so I do that. Yeah, I feel like those are some of the big main tips that I have for people. My husband works in air quality as well. And so we have lots of conversations. My kids know about air quality and "Oh, it's moderate. Okay". You know, yeah, they've got all the levels and know the numbers. So we educate our family on the importance and just keep up to date with all of these tools that we have. And also as the president of NAEM, we also have our wildfire resource page,

I wanted to mention that as well. That includes handouts for both patients and clinicians. More details of what I've talked about today, research, treatment protocols. And we have webinars on there, we have resources for community disaster relief support, and, you know, situations such as the recent fires in Maui. And so we, you know, I try to share that with all of my friends and family and other clinicians as well.

K Kendra Seymour 37:33

(Sorry about that. I have a puppy and he must have heard the neighbors come home or something because he's barking) But, um, and we'll link to those websites, like all the websites that you mentioned. We're going to so that people can find them quickly. I kind of laugh when you mentioned your kids, because my kids even though they're young, they very much are, you know, aware. They always comment, like, I'll walk into a place and they'll see me like looking up and you know, I'm looking for like water damage or like snapping pictures and like, "Oh, she's thinking about mold and air quality again". Or, you know, their friends come over, and we have our stand alone air purifier units and their friends was like, "Well, what's wrong?" And we're like, "Well, nothing's wrong, and we want to keep it that way". So yeah, it's definitely one of those things like, you know, those small lifestyle changes can you know, really, you know, give me some forward momentum there. So, before we wrap up, if people had follow up questions, or they wanted to get in contact with you, how could they find you?

D Dr. Katherine Carvlin 38:28

Yeah, I'm online. My website is www.drkatherinecarvlin.com. I'm on Instagram as well. And then the National Association of Environmental Medicine (NAEM) is a nonprofit organization, you know, resource for clinicians primarily. And that's https://envmedicine.com. But we have lots of webinars and just kind of general public members as well. And so those are also good resources and places to find me.

K Kendra Seymour 39:00

I love that and we'll link to both. Those are definitely some great resources there. We're excited at Change The Air Foundation to partner with you guys, as we you know, go forward in our mission to, you know, improve people's health by improving you know, the air that they breathe. So, thank you so much for being here. I appreciate you taking time out of your day. And I think our listeners, you know, you gave some really helpful suggestions that hopefully they can start putting into practice. So thank you so much.

D Dr. Katherine Carvlin 39:27

Great, thank you. I'm happy to be here.

K Kendra Seymour 39:30

And for everyone listening, thank you so much for joining us. If you found this interview helpful, do me a favor. Head on over to ChangeTheAirFoundation.org, and sign up for our newsletter

do me a favor. Head on over to ChangeTheAirFoundation.org, and sign up for our newsletter, because it really is the best way to get information like this directly to your inbox. Thanks so much. We'll see you next time.