

Flame Retardants, Formaldehyde & Your Indoor Air

With Lara Adler

SPEAKERS

Kendra Seymour, Lara Adler

LA

Lara Adler

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There was another quote from Arlene Blum, who heads the Green Science Policy Institute, that estimated that the average home has about two pounds of flame retardants in it, not like grams or ounce of pounds. So like a prolific amount of these chemicals, which subsequently have been found to be extremely harmful, particularly to thyroid health, their endocrine disrupting they can lead to cancer.

KS

Kendra Seymour

00:29

Hello everyone, and welcome to Your Indoor Air podcast. Brought to you by Change the Air Foundation. My name is Kendra Seymour, and today we're diving into a topic that impacts every single one of us, and that's indoor air pollution. Many of you know about outdoor air pollution being bad for your health, but what happens when they are inside our home is made unsafe or unhealthy because of things like our furniture or mattresses or textiles or even our dry cleaning. Many of our building materials and possessions contain synthetic chemicals like flame retardants and formaldehyde that make their way into our air and our dust. Now these chemicals don't always stay locked in the product or material, which means exposure can happen for weeks, months or even years. And here's the concerning part, a lot of these chemicals haven't been properly studied, especially when it comes to those low dose and cumulative exposures that happen over time. But don't worry. Our goal here isn't to scare or overwhelm you at Change the Air Foundation we're all about empowerment, and we want to shed light on some of the science behind these chemicals, what we know, what we don't know, and, most importantly, what you can do about it. So today we're going to cover some practical tips, including how to find healthier furniture and mattresses, plus some simple low cost changes you can make right now to improve your indoor air quality. To help us understand this topic, I've invited Lara Adler to join us. Thank you so much for being here.

LA

Lara Adler

01:40

Yeah, thank you so much for having me, Kendra.

KS

Kendra Seymour

01:43

Now, for those who don't know Lara yet, she's an environmental health educator and science communicator with over 14 years of experience, helping health professionals and health focused businesses understand the impact of environmental chemicals on chronic health conditions. Her work bridges establish an emerging research with practical and accessible strategies to minimize toxic exposure and build resilience against environmental challenges, combining environmental health education with business consulting, she's helped over 5000 health professionals in more than 35 countries elevate their expertise, achieve better client outcomes and become sought after leaders in the growing field of environmental health. Lara, I'm just, I'm so excited for our conversation today. I've been looking forward to it for a while, because I've heard you talk many times before, and I've read a lot of the things that you've written. And you know, the things you talk about resonates so much with my personal philosophy and the philosophy we have at Change the Air Foundation that, you know, there's a lot in our environment, right, and not all of it's good for us, but we can't live in fear, right? We live in the real world. So even those small changes can add up to big wins over time. And you know, I always joke, and if you've listened to the podcast before, you've heard me say this, that this journey, right to living, you know, a healthier lifestyle, living in healthier homes, really is about progress over perfection. So we're going to dive right in, because there's so much I wanted to cover today. Actually had a really tough time narrowing it down. But Lara, I wonder if we could first start by kind of setting a stage. Now, a lot of people assume that some of the synthetic chemicals in our building materials and our everyday products are tested, regulated and safe, but that's not exactly the case. You know, in the US, we kind of operate under this system where chemicals are considered, you know, innocent until proven guilty. And that burden of proving harm falls to the EPA, not the manufacturer. And so, you know, with all these tens of thousands of chemicals that are on the market, you know, we've seen some real consequences historically, right, with people getting sick, you know, having been injured, or, you know, even dying from it. So that history ultimately brought us to the passage of the Toxic Substance Control Act in the 1970s. Can you kind of walk us through some of the events that led to that law and what it actually accomplished and maybe what it didn't?

LA

Lara Adler

04:00

Yeah, I mean, the Toxic Substances Control Act or TSCA, as it's referred to, was passed in 1976 it was really kind of groundbreaking at the time, the US was kind of leading the environmental policy movement. So we were one of the first countries to have something like the clean, Clean Air Act and Clean Water Act, all

which sort of came to be in the 1970s and early to mid 1970s and, you know, there was a lot of things over the previous, you know, maybe 50 or 60 to 70 years that kind of led, led to TSCA's development. But the short answer is, you know, we had, we did not have chemical regulation prior to TSCA's enactment, and it was kind of a free for all. And we had a number of incidents, whether it was through medication, which ultimately, you know, some some incidents there, leading to the development of the Food and Drug Administration that actually started way earlier in the 1930s so the Food Drug and Cosmetics Act was passed in 1938 it was a little bit of regulation, but it was mostly pertaining to things like interstate commerce and making sure that products were, don't violate state laws and other places, et cetera. So it wasn't really like a national framework for protecting consumers against harmful chemicals. It was the FDA in the 1930s was mostly focused on one like I said, interstate commerce, but to like truth in labeling, like you had to tell people what was in the products. And that kind of came out of the snake oil salesman vibes at the turn of the last century, where we had, you know, products that had cocaine in it, or heroin or mercury, and you know, that information either wasn't disclosed and caused harm or what have you. So, you know, there was a lot of things that kind of rolled together that ultimately led us toward to passing TSCA in 1976. When TSCA was passed, there were already a roughly 62,000 chemicals in use or that had been registered for use in commerce. And rather than spending the time and the money to review those chemicals, they were grandfathered in as safe, and that's just one of the first short fallings of this policy. So it was great that we had something, and like you said, it really put the onus on the federal government with a piece of legislation that didn't really afford them the authority to take the type of decisive action that would be needed. For example, the TSCA didn't have the ability to issue recalls. They couldn't demand research be done like it was referred to as a very toothless law, because although it was in place, it didn't, didn't afford, Congress did not give EPA the powers that it needed to actually properly enforce the chemicals that were in commerce. And so we had these grandfather chemicals that were just kind of given a free pass. And then again, the onus was on the EPA to prove something was harmful, rather than the companies manufacturing these chemicals or utilizing these products, proving that something was safe. And so that framework left the country in a place where we would essentially be cleaning up problems after they've already happened. Because in order to prove harm, harm has to have already happened. And so it's a it's this is where it's the innocence until proven guilty. It's like one you have to prove it's guilt. You have to, harm has to happen, something that triggers a lawsuit and we've already kind of lost the plot at that point, you know, and so we have unleashed all of these chemicals that have not been studied, or not been studied well or adequately, and like you said, not studied in a way that really represents our true exposure. And that's only just starting to happen now in 2024, 2025 you know, that's really only that there's an emerging field of research I'm happy to talk into it called exposomics. And exposomics is trying to kind of identify, what are the effects of the totality of the exposures our exposome what's the totality of the exposures in real life that we're getting along with, things like stress and other sort of external factors that could be contributing to disease or disease states? And that's incredibly complex research, right? But the way chemicals are studied in the in, in from a regulatory toxicology standpoint, is to look at, you know, extremely high levels of exposure that are thousands of times higher than what you and I would ever encounter even, for example, in an occupational setting, and then just kind of looking going down from

that high exposure level and saying, okay, well, we don't see any effects at this level. We're going to build in a little bit of safety factors. In toxicology, those reference points are the maximum tolerated dose is where we're at, at the high end. And then we're going and looking for what's called the low L, or the lowest observed adverse effect level. And then that meaning that is the lowest point, the lowest dosage of whatever the thing is that is causing some type of adverse effect. And then they look a little bit lower, lower doses, and they seek to identify the no L, which is the no observed adverse effect level. They're like, we don't see anything here, nothing adverse. And adverse is important word here, because adverse, typically in regulatory toxicology, is looking at cancer, so tumor growth major gross histological changes in cells, death, right? They're not looking at slight fluctuations in, say, like your immune function, or in hormones or in insulin resistance. They're not looking for those things. And so they're really only looking through a very narrow lens of what is defined as an adverse effect. And so when they have that no L that place where they don't see anything else, they'll bake in some safety factors, usually about like, you know, thousand times, a thousand fold lower, and they'll say that's the safe level, whatever that is. But that level is never tested directly, and anything below that level is also never tested directly. It's just an assumption, and then assumption is rooted in the toxicology framework of the dose makes the poison, which has been around since the 16th century and you know it really is, says that you know more of something is worse than less of something in very paraphrased language, and the dose makes the poison is absolutely true for many. I would say even most substances, radiation is a really good example. We all are exposed to ambient levels of radiation, and our bodies can tolerate it. There's no problem. But extreme levels of radiation, Chernobyl levels are deadly like and so more is worse, less is okay, and so many, many things follow that trajectory when it comes to a lot of the chemicals that we're exposed to in our normal everyday lives, in particular ones that have the capacity to interfere with our hormones, they don't really follow that framework. So very low doses of certain types of chemicals of which there are many, can actually have a more profound effect at that very, very low level, below the safety threshold, or that safety level that's set, but they're not studied directly within regulatory toxicology. And regulatory toxicology, as the name implies, is, where is the research that regulatory bodies are looking at to regulate chemicals in commerce? And so we basically, you know, the short answer is, we have this very large gap, and TSCA didn't really do anything to address any of what I just described. So, you know, they it was just a very toothless law under TSCA, the EPA was literally unable to ban asbestos despite, you know, over a decade of litigation and hundreds of thousands of documents and papers indicating that, you know, asbestos is absolutely the cause of mesothelioma, and causes cancer and kills people. But the asbestos industry was had deeper pockets and had more money, and EPA didn't even have the capacity to essentially do its job. So that was, you know, what we had, and TSCA did not get a significant, meaningful update for 40 years. It took until 2016 for that update to happen. And I was still, you know, I was doing this work at that time, and I remember thinking quite naively, like, oh, wow, well, now that this update is coming, what am I even going to talk about? Because the problem will, the problems will be solved. You know, like, clearly, that is not the case, and that is not what happened. So in 2016 the Toxic Substances Control Act was updated. This was the referred to as the Lautenberg Chemical Safety Act. And you know it was, it did strengthen some of the kind of loopholes or shortcomings of the original form of TSCA. It about required mandatory risk

evaluations for existing chemicals. But existing chemicals at that time was close to 80,000 and so what is the amount of time that's going to be necessary for that review process to take place? And so there was a sort of a triage list that was created, I can't remember the name, essentially, they would identify high risk chemicals and say, we are going to give ourselves X number of years to review these chemicals. But that, in and of itself, became a log jam. It's incredibly difficult. And industry was intentionally kind of blocking the flow of those assessments, those risk assessments, because they would say, well, here's a new chemical. And new chemicals under the update did require data and so and a review and so, industry would flood the EPA with, here are a whole bunch of new chemicals. And if you're busy doing these, you know, we you know, we know you have a limited workforce that's with it at an agency that's understaffed and underfunded, and so we're going to log jam that process so those older chemicals don't get the thorough review that they really, truly need. You know? So you know, the the new version that we have currently, it's better, but it's still lacking, right? It's it's going to take, I think somebody had calculated, based on the timeline of what EPA was actually able to get done, how long it would take for them to review all of the chemicals that were already on the market, and it was something like a couple thousand years, like, just, like, literally, like, not, like, no, not in anybody's lifetime. Is that going to get done? And so, you know, there's that. And then the other aspect of of this is TSCA. And you know, the new version is still referred to as TSCA. It doesn't regulate all chemicals in commerce, other agencies regulate other chemicals. So pesticides are regulated by FIFRA, which is the fungicide, insecticide, whatever. And so cosmetics are regulated differently. Pesticides are regulated differently, and so and food additives are regulated differently by different agencies, and so they're not under the purview of TSCA. So it solves some of the problems, some of the way, but it doesn't. It wasn't the big, you know, sweeping success that we were, we're hoping?

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Kendra Seymour

17:40

Yeah, I think, and I think that's something that like consumers. And I know I naively thought at one time, like, listen, if it was really bad for us, they wouldn't be selling it, that paint wouldn't be on the market, that flooring, the chemicals in my mattress, like we just wouldn't have it. And the reality of all of this is, you as the homeowner, the renter, the consumer, have to be proactive, right? Like you're the only one who will care as much about your health or your home. And so in one hand, it's very discouraging to understand that so many of these chemicals, like, I'm looking around my office right now, there's paint and there's curtains, and I have a piece of wood furniture that has a finish, and there's carpeting, and there's my dog's bed. And you know, there's so many things in our environment, and you think about the thousands of chemicals that go into that, and you think, Well, I can't see it, or I can't smell it. It's not impacting my health. And it's not quite that simple. And I love that you brought up the dose makes the poison, and you, you did a nice job explaining to why that is sometimes correct and sometimes not. And I recently heard we have an interview coming out with Dr. Masri, and he talks about the dose plus the host, which I like because it talks about, then the individual characteristics, age and your health status and so many of those other factors that

account for you know, even if you're just looking at it, let's just say, from a mold perspective, we'll take it out of the context of today's talk for a second, like, how can we all live in the same house and if we're being exposed to be impacted the same way? And it really isn't that simple. There's so many factors that influence if and how someone responds, so that's why we're having these conversations, and I'm so excited for someone like you now I know you're not a doctor, though. Can you frame some of the health symptoms, just generally speaking? Because I want people to realize this isn't just like, oh, my eyes are irritated because I painted my bedroom yesterday, and I can still smell that paint smell. I mean, there are some, you know, correlations to various health symptoms from some of these everyday products. Can you just highlight a few of them so we get a sense of, like, what these symptoms might be?

LA

Lara Adler

19:50

Yeah, I mean, I'll kind of zoom out first, and then we can get into symptoms, um. And I'll say that, um, it's, it's a, it's a very challenging in the environmental health, environmental toxin chemical exposure space, because if we're talking about chronic illness, or, you know, serious disease, the latency between exposure and symptoms arising can be decades. It can literally be decades. And in fact, there is a sort of subset of research referred to, or that studies what's called the fetal origin of adult disease. And the fetal origin of adult disease is looking at like, what are the things that fetus might be exposed to that might manifest in disease in adulthood, so literally, 50 or 60 years later, when they're, you know, getting developing cardiovascular disease, and is there any association between what might have happened in utero that could predispose them to these conditions? So it's not. It's kind of hard to pin the tail on the donkey, if you will, and say like, this is the cause, and this is the thing that caused or or contributed to this condition, and if you remind me, so that I don't lose my train of thought, we can come back to our tort law system, like our legal system of like, why industry loves that. They love that latency period, and they love some of what I'm talking about here. So you know the idea that we're going to be exposed to, say, paint fumes, and then suddenly have a neurological disorder? That doesn't work that way. It's also not just one exposure. It is the totality. This is why I'm so interested in exposomics research, because it's, it's, you know, what's the straw that broke the camel's back? What is the thing that tipped somebody over the edge after a lifetime of exposures? And it's really hard to go back and map what, what? What were you exposed to over the last 35 - 45 years of your life? I don't know lots of stuff, I guess. How do you identify, what was the thing or the things that contribute? It's really complicated. But to your question about, like, health effects and and, you know, outcomes, one I'll say that environmental exposures impact every single organ system in the body. So we're talking about things like reproductive health, Hormonal Health, neurological health, development, growth, learning, IQ, all of these things we started talking about metabolic health, cardiovascular disease, neurodegenerative diseases, like Alzheimer's and dementia, like all of these things, have an environmental component. Some the evidence is much stronger. Others, you know, it's a little bit hard to nail things down, but I will say that there is no I don't want to be so sort of cavalier to say like every single health problem that people are people have is rooted in environmental exposure. That's very

likely not the case. I mean, even when we're looking at things like metabolic and cardiovascular disease, which are major, major healthcare burdens and economic burdens in our population, a vast majority of the US population has, you know, insulin resistance, diabetes, pre diabetes, obesity, cardiovascular disease. And the primary driving factors of those are not environmental exposures, even though they contribute. It really, truly is diet and exercise. Like fundamentally, you know, I was reading recently the data on fruit and vegetable consumption in the United States, 90% of women and 97% of men don't get enough fiber. 90% of the US population doesn't eat enough fruits and vegetables. And so like that is the biggest causal factor, or major contributing factor, to these conditions, environmental burdens only dog pile on that situation.

KS

Kendra Seymour

24:14

Yeah, they certainly, like in some cases, they can cause, but they can certainly, and I think in many cases, exasperate, like what you have already going on. You know, we've talked about spending 90% of our time indoors. Now, people, you know, our buildings are built tighter for various reasons, and so these chemicals are building up. We're bringing in more materials with more diverse chemical exposures. So you're right. It's not, well, I'm only exposed to this one time, you know, one one poison or one toxin. We're talking, you know, essentially a whole soup, which is why you know there are, I think the good news here, though, is there are many little steps you can take in all these areas that can start to chip away at these things, right? And so if you're not able to, you know. Change your flooring. We talk about flooring in an episode with Andy pace. That's I get that I totally.

LA

Lara Adler

25:05

I got a house. I bought a house a few years ago, and the flooring is vinyl plank, luxury vinyl plank, my like least favorite material. It was also brand new, like year old, right? And so the previous homeowners put that in, probably in order to, you know, get their house ready to sell. And it's my least favorite material, but, like, I'm also not going to rip it out and put something else in. The cost is astronomical, and there's an environmental component to that, because throwing vinyl plank into a landfill isn't it's just shifting the problem somewhere else. And I don't love that framework, because it really leans hard into the NIMBY mindset. NIMBY, meaning not in my backyard, but not in my backyard, is something that we often see in predominantly white neighborhoods where they say, well, we don't want that industrial facility or that plant or that landfill in our neighborhood, let's move it into a quote, unquote, less desirable neighborhood. This, ultimately, is what's referred to as an environmental justice issue where black and brown people and low income underserved communities tend to have higher exposure to a lot of environmental pollutants, not because they choose it, but because that is, you know, it's, it's rooted in historical, you know, frankly, racist practices like redlining, which leans into this, you know, we're going to, we're going to draw the lines of the district, the voting district that we want, and we're going to set real estate in undesirable

neighborhoods to be of lesser value. Therefore, big corporations are going to want to spend less to situate their factory or their processing plant or their waste dump or whatever in those neighborhoods with lower real estate prices. So it's like a very complicated and nuanced topic. But yes, there are so many factors. There's so many layers to this conversation. It's frankly, why I find this topic so fascinating is just it literally touches every aspect of our lived experience, and certainly, you know, differently for different communities.

KS

Kendra Seymour

27:23

Yeah, and I think too, you know it, I understand the overwhelming feeling that people get, and I'd rather not know, but I think once you lean into that, like knowledge is power.

LA

Lara Adler

27:34

Yeah.

KS

Kendra Seymour

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It's very freeing in the sense. Well, okay, now I can take steps. Here are the things that I'm going to do. Here are the things in my control. Here are the things not in my control. I'm not I'm not going to worry about that right now, right? Like, I'm going to focus on and what I can and so again, like my kid, I'm always like progress over perfection. And you know that.

LA

Lara Adler

27:57

It's impossible to the ship sailed on, like, non toxic 100%, the ship sailed on that, like, 200 years ago or more, you know, like we, we in our current lifetimes, have never had the opportunity to achieve something like that. You know, this is where I usually interject a dumb joke about, like, it just makes one of people want to live in a plastic bubble. And then I'm like, what kind of plastic? And does it off gas? And, you know, like, little stupid, but it's a dad humor. But the idea is that, like, we can't get to zero, and that doesn't mean that we throw up our hands and go, oh, well, we're all going to die anyway, which is very often, what I have heard over the last 15 years is that kind of framework of like, I just want to live my life. We're all going to die. And it's like, yeah, okay, none of us are getting out of this gig alive right now. We're all Yes, obviously, we are all going to die, and I don't want the life that I have to be lived under the thumb of some type of avoidable chronic illness or disease, that is what we're aiming for. We're aiming to lower our exposure so that we can kind of peel back one of the avoidable factors, or somewhat avoidable factors, that might be contributing to some type of health issue. It's not about perfection. It is just about doing what we can can

do. I always say, let's do what's doable. And where that line is is going to be different for every single person, because not everybody's has the resources to afford a \$800 air filtration system or \$1,000 HEPA, you know, perfectly sealed vacuum. These are things that very few people actually have access to, and so we want to make sure that the steps that we're taking are easy, they're within reach, they're very actionable. And you know to your point about people often being over overwhelmed, like, yes, I know, I get it. I literally have been living in this conversation for a very long time, and overwhelm it overwhelming anxiety are like the predominant feelings that people have when they start learning about this topic. And what I've learned in the time that I've been doing this is that overwhelm can't exist when we are in a state of action. That overwhelm is rooted in having information, but not actually doing anything or knowing what to do about it. So you're kind of like a chicken with head cut off, running around being like, oh, you know, panicking over everything. But as soon as you start taking actions, even if they're small, that overwhelm kind of cloud shrinks considerably, and we just kind of do what we do. We make the changes that we can make, and we try to stay consistent with those changes throughout our lifetime, because it's the long term exposures over our lifetimes that's what matters, the individual exposures of like, you know, walking through the fragrance aisle of the, or the laundry aisle of the grocery store is not a big deal. Asterisk. Caveat, there are some people for that is for who that is a big deal, people with multiple chemical sensitivities, or people that are like highly, highly sensitive and fragrances are like a migraine or a allergy or asthma trigger for those people that the effect is acute, it's obvious. That's typically not what we see. We're looking at chronic burden over time. But yeah, that's that is my take. Is like action over overwhelm.

KS

Kendra Seymour

31:41

Yeah, we want to avoid that analysis paralysis, where you're just so overwhelmed and you do nothing, because there are things that you can do. So I so much of what you said, I was just nodding along because I think it's super fitting. So I want to talk, you know, we're going to talk for those listening. We're going to talk about some bigger items, those ones that we, most of us, have to plan our budget for, saving for some furniture or any mattress, but we'll also end with some, I think, some low hanging fruit, quick wins, if you will. So I hope you stay with us to the end. So before we jump in though to like furniture and mattresses, I want to start like with the conversation around flame retardants, because that's something that is in some of those items. And I think it's a bigger issue than most people realize, right? We talk about, I think I said before about how some of these synthetic chemicals, they don't stay locked into the product. They can migrate out over time. They can collect into our dust. That dust can become re-aerosolized. We breathe it in. We can ingest it through, you know, hand to mouth activities, especially with babies, or maybe you're eating on your couch, right, or eaten in bed. And there was a quote, and I've heard you share this one before, from an expose, I think it was in 2012 from the Chicago Tribune, that said the average American baby is born with 10 fingers, 10 toes, and the highest recorded levels of flame retardants among infants in the world. So what do we need to understand about flame retardants? Where are they found? How found? How do they into our bodies, and why are they still widespread in American homes?

Yeah, so, flame retardants are kind of a an in to me, and really interesting case study of the politicking that happens around chemicals. So you know, different different agencies regulate different types of products, as we've already discussed. So like the National Transportation Safety Board regulates automobile interiors and flammability standards and things like that. So like that is a use case where on the surface that seems like an appropriate place for there to be flame retardants, because, like, I don't want the interior of my vehicle, which carries gasoline and is has a higher degree of risk of getting into a car accident and having a combustion incident. But like, there are places where, again, on the surface, and I can come back to that, and probably will, organically. That seems like a really good idea. And then there are the uses in things like upholstered furniture, and that's really a fascinating case. So in the 1970s I love this story. So in the 1970s smoking rates were really, really high. Lots of people in this country smoked, and people would fall asleep with their cigarettes, and a number of people died in house fires that were ignited by cigarettes that they'd fall asleep, you know, burning ash fell on the chair. The chair, you know, caught on fire. And so the federal government went to the tobacco industry and said, Look, we need you to create a self extinguishing, self extinguishing cigarette to stop these deaths? And the tobacco industry is like, got it. We're on it. No problem. So they did some research, they did actually produce a self extinguishing cigarette. But it altered the taste of the cigarette, and they were like, well, we can't have that, because then we'll lose sales. And, you know, profit reigns supreme, and so what we're going to do is deflect. And so what they did is a big PR campaign, and they essentially turned around and said, look, it's not the cigarettes fault for starting the fire. It's the couch's fault for burning, ridiculous. And so the three largest manufacturers of flame retardants in the United States started, caught wind of this, and they started to petition the state of California to pass flame retardant standards within the state that would require the use of flame retardant chemicals manufactured by these three companies. Right? So that is a cash grab, and the reason why they chose the state of California is because California is the largest economic state, physically, I think it's the largest state, but it's the largest economy in the United States. And what happens in California tends to trickle down to the rest of the states, and so laws passed in California very often, can become the de facto standard across the country. And wouldn't it be great if all 50 states suddenly required flame retardants in their upholstered furniture? Those three flame retardant manufacturers would be set to make a significant amount of money. And so that's what they did. They petitioned. They had, you know, tons of PR campaigns. They participated in astroturfing efforts to essentially convince the public that they want flame retardants, because if they don't have flame retardants in their upholstery furniture or children's mattresses or whatever, the babies are going to burn to death. Like, literally, super manipulative ad campaigns funded by these chemical companies who are wanting to pass legislation. So in 19, think it was in the in 70 I don't remember exactly when it was passed. In the early 1970s there was a technical bulletin called TB 117 and TB 117 required the use of flame retardants in upholstered furniture, specifically so mattresses were regulated under a different piece of policy. But technical bulletin, bulletin 117 required the use of flame

retardants. And so flame retardants, you would logically think, in order for flame retardants to protect against fire, to retard the spread of flames, the outside of the couch would be treated that's logically like, well, let's put it on the outside, because that's, that's the that's the stuff, right? That's where it should go. That's actually not where flame retardants were applied. Flame Retardants were applied to the polyurethane foam in the cushions inside the couch, mostly because polyurethane is a oil derived product, and it can be naturally flammable on its own. And so that's the thing that they were like, let's saturate this foam with these flame retardant chemicals, like we'll spray it on. So because the flame retardant was not it was an applied product. It wasn't baked into the polyurethane matrix as it was being formed, it's not molecularly bound to the foam itself, so it sheds over time, it falls out, naturally. And as foam ages and foam degrades and everybody's seen the like old yellow, crumbly polyurethane foam, the amount of those flame retardants migrate, that are migrating out increases so we have more exposure, and then the couch is wrapped in fabric, and whatever. ubsequent research found this is this resulted in that quote that you read that we had the highest levels of flame retardants, specifically because of technical bulletin 117. Now nation, national sellers of furniture, Sears, you know, Macy's whatever. They don't want to manufacture a special type of couch just for the state of California that contain these flame retardants. So they said it's just going into all of our couches. So then, no matter where you lived. You didn't have to be a resident of California. You were buying couches. Everyone was buying couches that had flame retardants in them. The only exception is, you know, local, if you're getting, you know some local guy who's making a shop who's making couches, you know, nose to tail, they're not selling outside of the state. They don't have to adhere to those laws. So, like, there's some exceptions here, but for the most part, all upholstered furniture contained large amounts of flame retardants. There was another quote from Arlene Blum, who heads the Green Science Policy Institute, that estimated that the average home has about two pounds of flame retardants in it, not like grams or out of the pounds. So like a prolific amount of these chemicals, which subsequently have been found to be extremely harmful, particularly to thyroid health, their endocrine disrupting, they can lead to cancer. There's been a rise in feline hypothyroidism that the veterinary community attributes, in some heart to flame retardants, because cats are groomers and cats are on the ground and they're laying on the couches and on the carpets and all that, and they ingest these thyroid suppressing chemicals. So that changed. That policy in California changed in 2013 the label on the underside of the cushions on your couch will typically indicate so if you have an old couch, you might still see these labels that say TB 117, 20 or TB 117, 2013 which was the update, and the flammability standard in 2013 was updated in California so that manufacturers were not required to use flame retardants. They still could, but the requirement that they had to use chemical flame retardants was lifted. And so what companies started to do was use what are called barrier fabrics. This is what the mattress industry had already been using, which are fabrics that are either manufactured a certain way, they're woven in a certain way, or they're made from specific materials that themselves, because of the material or the weave, are naturally fire resistant.

KS

Kendra Seymour

41:50

Yeah, yeah.

LA

Lara Adler

41:51

Yeah. And I'll just add, turns out that the flame retardants in this furniture did not actually do anything to lower fire risk.

KS

Kendra Seymour

42:02

Yeah, and I mean, if you look at the data, like it didn't save any lives.

LA

Lara Adler

42:05

It didn't save any lives, and in fact, it made the burning, like when a house is burning, firefighters have the highest level of exposure to toxic chemicals, bar none, because they are walking into buildings where the materials inside those buildings are burning. And you know, I had seen Arlene Blum from Green Science Policy Institute speak on this topic. She partnered with lots of firefighter unions to help them petition to get flame retardants out of consumer products because of how dangerous it was for them when they burned, because they released extremely toxic chemicals. And I remember at that the presentation that I was at this was probably 13 years ago. I remember one of the firefighters that had joined her saying, when a house is burning, one of the first things that we do, if the, you know, the living room, for example, is up in flames, is we try to throw that by a couch out the front window to get it out of the space, because it's so toxic when it burns. Yes, they have respirators on, but, like, they're still getting exposure through, you know, their skin and whatnot. So it's, it's a, it's a real bamboozle, I would say, by industry, yeah, that resulted in significant exposure to the US population.

KS

Kendra Seymour

43:30

I'm glad you brought up Dr Arlene Blum, because I was actually going to quote her one last time folks that I'm done with quoting, but I just, I think it's so moving, because you can also find her information at Green Science Policy Institute, yeah, and sixclasses.org which is another one, and we'll link to both of them. And you know, she talks about how, because she was instrumental in getting flame retardants out of PJ's, folks. So if you were born in the 70s, I was born a little later than that, they were actually putting these in clothes in infants. But we, we've established why that's not a good idea. But she helps you to move that out of of being incorporated into infant clothing. But she said, when we're eating organic, we're avoiding very small amounts of pesticides, then we sit on a couch, which can contain a pound of chemicals from the

same family as banned pesticide like DDT. So so let's talk like then couches, because it's we, we focused on flame retardants, but there's other things from all chemicals and, you know, get the stain protector from the kids and all that stuff. But let's talk healthier couches. So if I'm in the market, or maybe going to be in the market, I'm gonna start saving. Are there specific brands or certifications? Can I, you said 2013 I can check the label in terms of the flame retardant, if it meets.

LA

Lara Adler

44:42

We're in a better we're in a way better place now than we were then. So in 2014 and 2015 like it was possible and then forward, it's been possible to buy a flame retardant free couch. Usually have to ask a bunch of questions. I think you still do in 2020 California updated their law. Again, it was Assembly Bill, 2998, if I'm remembering correctly, and that law prohibits the sale of upholstered furniture and some children's products and mattresses containing more than 1000 parts per million of us specified so specific types of flame retardants, halogenated flame retardants, organophosphorus flame retardants, etc. So it's it's not zero, a thousand parts per million is not nothing, but it's a significant reduction to the pounds that Dr Arlene Blum was talking about. So that is a huge win, because, again, that ripples out across manufacturers who are like, I don't have to put these things that now that cost me money, you know, the company's money to have to buy these chemicals, and if they don't have to buy them, great it lowers their cost. They'll probably keep the couch price the same. So they're making a little bit higher of a margin, which is fine, whatever. But again, it's, it's you have to ask, we have to, like, do our due diligence as consumers and just confirm, are there any added flame retardants? So that's a question that I asked. The other question that I asked, I don't have specific brands to recommend, because all of the big box stores, Pottery Barn and West Elm and all of these, like, furniture sellers, for the most part, they are flame retardant free at this point. So, like, it just makes it a lot easier, you know, 10 years ago, not even 10 years ago, you know, yeah, I guess, I guess 10 years ago, it was really hard, and you had to ask a lot of questions, and now it's just on their website.

KS

Kendra Seymour

46:43

Yeah, yeah.

LA

Lara Adler

46:45

So, so flame retardants is like the first one. But the other thing that we want to ask for to your point about like stain resistance is, is the fabric treated with any stain resistant chemicals either by the furniture manufacturer or by the manufacturer of the textile.

KS

Kendra Seymour

47:02

Yeah, yeah. And I know, if you bought a couch at all recently, they, they'll give you the hard sell. Oh, you have children, you know, you're going to want to protect this captain. Just, say no, just say no, yeah, and that's because those stain resistant products are using PFAS chemistry. Those also migrate out, you know, they're also in house dust so I'm glad you brought that up. You know, these chemicals that we bring into our home, the off gas from the materials that we have, they don't just evaporate. They don't just like them. They're molecules. They don't just go away. And so what they do is they settle in the dust in our homes. Yeah, you know, and that's concerning. And there have been house dust studies that have found there was a meta analysis of over I think it was over 45 different house dust studies that found flame retardants, phenols, phthalates, fragrance compounds. And like phthalates, which is a plasticizer, was found in 100% of samples across all 45 studies, as were fragrance compounds. Yeah, and maybe we can talk about, you know, I if you've listened to the podcast, I'm a big fan of effective cleaning practices, and maybe we can end with some of that, because that is an entry point that's accessible for most people.

LA

Lara Adler

48:16

Absolutely.

KS

Kendra Seymour

48:17

Yeah, all right, so, so that's good to know, so we can do our homework. If you have an older couch, then some of this might be more applicable. And you know, you may be thinking, Oh, maybe I moved that up in my timeline. But again, like we're not saying, throw everything out of your house, right? Let's be strategic. Let's make informed choices and things like that. So now let's talk about mattresses, because that's another big ticket item, right? And we've talked before, you spend 90% of your time indoors, but a third of that time you spend sleeping in your bed, right? We know that when you sleep, your body is detoxing, it's healing. You know, it's a really important time for your body. So what do we need to know about mattresses? Are we dealing with the same concerns in terms of flame retardants and other chemicals, you know, and then we can talk about healthier mattresses and certifications and things like that.

LA

Lara Adler

49:06

Yeah, you know, I we're not dealing with flame retardants at all to the degree that existed in upholstered furniture. And that's because, like I had said earlier, the mattress industry moved to barrier fabrics on the exterior of mattresses a long time ago. So it was it's like flame retardants are less of an issue. There are still likely going to be some mattresses that contain flame retardants. This is more likely when we're looking at like memory foam mattresses that don't have the same exterior fabric that a conventional mattress does for whatever reason they just choose not to. I guess it maybe interferes with the memory foam ness of the mattress, whatever. So like memory foam mattresses may contain flame retardant still, but the main issue with conventional mattresses is the use, again, of polyurethane foam and polyurethane foam itself is made with many VOCs, volatile organic compounds that off gas that and they'll off gas for the life of the product. More so if it's a memory foam mattress, because that meant that polyurethane foam has been chemically treated to essentially have this, you know, slow release memory foam characteristics. And so those are, you know, release a lot of chemicals. I certainly know people that are chemically sensitive, that can't sleep on those at all, you know. And to your point, yes, we spend a third of our lives in bed. And we're also, like, within a like, our faces are either on on these mattresses or just like inches above, and there is what's referred to as a breathing zone where these chemicals are going to release. And kind of hang out in this breathing zone. We all know what a new mattress smells like. They're strong, they're awful, you know, it's, it's a lot, and so there's a lot of different chemicals. There's a very complex kind of cocktail of chemicals that can be in conventional mattresses. And I really do think that, you know, it's not the first thing that I recommend people change at all, because it's such a big ticket item. You know, a mattress is supposed to last between 10, 15, or 20 years, and so this, you know, when I first started teaching and learning about chemicals, like I had a conventional mattress, and it took me seven or eight years of doing this work and knowing, before I was like, okay, it's time to switch. And the reason for that was just because the cost of a organic mattress that isn't made with these materials is so much higher. So it is very much like a luxury item. Most people are not going to be able to afford a three to five thousand dollar mattress when you're looking at, you know, the Serta, Sealy alternative that might be one thousand at a maximum. So it is a big spend, but I do think that it's a spend that is worthwhile if somebody has the capacity to do it.

KS

Kendra Seymour

52:15

Yeah, and it's definitely one of those things that you know you plan for. And I'm glad you brought that up. And again, just to continue to be real with people. Like, for all that I know, and for how long I've been in this industry and indoor air quality, like, in my like, I live in the real world with a real budget. Like I, I have carpet upstairs. I I don't love having carpet upstairs. It is seven years old. We are saving over the years to replace that, you know, but I am weighing the physical, the logistics, whatever, and then getting it out, and then whatever you're placing it with. And I know that, you know, that would be a healthier option for my

family, because it holds less dust and the million reasons with carpet that we talk about in other episodes, but, but we're still okay, and I'm still doing things right. So it's about, it's making the plan and seeing, all right, where, where am I going to put my time and my energy and money? So for mattresses, because I do think like those, get your mattress in a box and the foam toppers you send your college kid off to, I very much remember the odor for those. Are there certifications or anything that like, if we are looking towards that, so we can maybe start doing some research and set in a budget or anything that you can guide us towards? Yeah, yeah, absolutely. I mean, I think that there are a handful of certifications that are worthwhile looking for. There are also some ones that are a little bit kind of bogus. And I'll caveat this by saying anything is better than nothing, right? So any certification that's saying, for example, like CertiPUR. CertiPUR is a certification that was developed by the polyurethane mattress industry. And they're like, oh, anything that's certified as CertiPUR is free of like, certain flame retardants and heavy metals and phthalates and formaldehyde and is low VOC. But as I'm sure you know, that term low VOC doesn't really mean what we assume it means. So I want to, I'll stop you just for a second if you haven't listened to our recent interview with Andy Pace, and I'll link to it in the show notes. We literally, in that unpack VOC, low VOCs, what is counted in that, what's not. So listen to that if you want the details. But, yes.

LA

Lara Adler

54:28

Yeah. So, so CertiPUR is better than nothing, but it is also a, like, swiss cheese kind of certification where there's, like, lots of holes and gaps. And the problem is, if consumers don't know that, they just look at this certification and say it's free from certain flame retardants, they don't know how to look at the language with nuance, and they don't understand what are the other chemicals that might be in here that aren't covered by this certification. Is very common in all certifications. They all have kind of gaps. So the ones that I primarily look for when it pertains to like organic mattresses or mattresses that are made with, you know, cotton, wool, and latex, those tend to be the three primary materials, is GOTS and GOLS certification. So GOTS is the Global Organic Textile Standard that certifies that, you know, the cotton or natural fiber materials in the furniture, sorry, in the mattress don't have, you know, there's, I think it's, I think they have to meet up to 95% cert of certified organic fibers. The GOLS standard GOLS is for latex, so Global Organic Latex Standard. And that just means that the latex itself does not contain any, you know, pesticide residues, or the trees were not grown with any pesticides. There is, and I'm sure that you can speak to this, and you probably have an episode on it is like Greenguard Gold or Greenguard certification. It is another there's layers to it, and Greenguard isn't the same thing as Greenguard Gold. And there's little swiss cheeses, right? So there are things that it covers and things that it doesn't cover. And this is where I try to look for kind of overlapping certifications, because one might fill the gap, say, of another one. Another certification that I like is the MADE SAFE certification. MADE SAFE is just an independent company that, you know, reviews products and companies for their ingredients, and then they get, you know, companies that meet the MADE SAFE standard, which is a very, very high standard in terms of toxic chemicals, then they can say they're . MADE SAFE Certified. So those are great certifications. There's, you know, not a ton of

mattresses that kind of have all of those. But there are brands that I like. I really love Naturepedic. They've been around for a really long time. I've chatted with Barry Cik the owner of Naturepedic, he's wonderful. You know, they're very, very thoughtful in their mass, mattress production. So, for example, infant mattresses contain no latex because babies can potentially have a latex allergy. So latex is never used in baby mattresses, which is just as a is a thoughtful way to produce a mattress. So Naturepedic is a good line. They also have a less expensive sister brand called Happpy, H, A, P, P, S, Y, that's great. Avocado is a pretty accessible brand. I you know, there's a look, caveat, asterisk, small print. They, you know, had some lawsuits against them that they settled, and we don't know the details. So there's a little bit of like, maybe, but it's still probably a pretty good, accessible brand. So those two are my favorites, but there are also Lifekind mattress, I think is pretty good. My Green Mattress is another company. And then Savvy Rest are the other brands that are like, pretty good out there that in terms of kind of ticking the boxes of those certifications. So, you know, shop, shop around. Some of these places have showrooms. You can look to see if there are any, like organic or natural mattress stores that are distributors, or, you know, sellers of these brands, that you can actually go in and try them out, even if you order direct from the company. Although, if you're going to a brick and mortar store, order from the brick and mortar, sometimes they can get you better deals. We're supporting a local business all that stuff, but you can always go or you hopefully, if you have one in your area, you can go to one of these stores and try these mattresses out. Yeah, so those are, those would be my recommendations on the mattress front.

KS

Kendra Seymour

58:55

That's so helpful. And thank you for all the specific you know, mentions of certifications and brands. We'll try to link to as many as possible of those, like in the show notes, for sure. So now one of the things, and I've, and I've heard you talk about this before, and I want to highlight it, just because I thought it was really interesting. Can we talk about dry cleaning for a second? So for for lots of people like, you know, maybe you pick up a suit or something for work from or whatever it is, from the dry cleaner, you bring it home, and you leave it in the nice plastic bag, and you stick it in your closet, and you don't necessarily think about it until you have to wear again. Maybe that closets in your bedroom. But there's some exposures that are going on there from dry cleaning. I know there's been some recent changes in the laws too, but talk to us about dry cleaning, because i I'm willing to bet that most people aren't thinking about their dry cleaning in terms of how it's impacting air in their home.

LA

Lara Adler

59:48

Right, so the dry cleaning chemicals that are predominantly used in conventional dry cleaning is PERC abbreviated as PERC or perchloroethylene. Is often how it's or trichloroethylene. These are solvents, and they're used in the dry cleaning process, and they're highly toxic chemicals that are linked to neurological

issues, mostly in the people who work in that industry that are exposed constantly, that either work in dry cleaning at the retail front or at the dry cleaning facility. Many people don't realize that when you go drop your stuff up at the dry cleaner, sometimes that's just a storefront and the facility is actually someplace else. So other times it's in the back, and so these chemicals are highly toxic. They are found in drinking water. They are major contaminants. And you know, slowly, we have been trying to address these chemicals at sort of a national level, but to your comment, yeah, when we bring home clothes from the dry cleaners, they all have that specific smell, right? Like we know what that smell is. And when we leave the plastic bag on the outside of the clothes, it's kind of trapping those chemicals in your closet. And so air quality, indoor air quality tests have found that, like if you keep dry, clean clothes in your bedroom, that you can have higher levels of PERC in the air in your bedroom. And so it's a it's not recommended also, I'll just say most textiles don't actually require dry cleaning. A lot of textiles that say dry clean only can be laundered they often need to, need to be handled a little differently and not thrown in with a regular wash. But it is not required as frequently as we want it to people, you know, men dropping their you know, business dress shirts that are cotton to the dry cleaner is generally not necessary. You can wash them. The benefit of the dry cleaning process is really more the pressing process, right? Like, that's the like, Oh, my shirt, yeah. It's like, Yeah, okay. But you can also just drop your clothes off to be pressed and not cleaned.

KS

Kendra Seymour

1:02:30

Yeah.

LA

Lara Adler

1:02:31

So, you know, for things like that, you know, yes, the solvent process, the solvents are actually, they are good at removing stains, right, dissolving the fats and oils and stains on clothes more so than traditional laundry products. And there's a price to pay for that. You know, there's, and there's been a lot of movement in the in the sort of PERC, regular regulation front. I think it started in in New York. I'm trying to remember, I don't remember the exact date, but I want to say, like, six, seven, eight, years ago, New York passed laws essentially updating or regulating the use of PERC in dry cleaning facilities, especially in dry cleaning facilities that were located in on the ground floor of residential buildings. So New York City is a densely packed space, and so you have apartment buildings above dry cleaners, and those chemicals, because they're solvents off gas, and they travel up, and then you have higher levels of PERC in the air in the homes in the apartments above the dry cleaner. And so I believe the state of New York, they didn't ban it outright, but they banned the use of maybe getting some of the details wrong on this, but they banned the use of new dry cleaning businesses opening using old PERC dry cleaners. So they were essentially forcing them to modernize and to say like, you can't continue this. We can't perpetuate the use of PERC and the machines that use other dry cleaning processes, like CO₂, which is a much greener and cleaner process, are much

bigger and much more expensive machines. They're like forty, fifty thousand dollars and that was, you know, nine or 10 years ago when I last looked so I don't know how much they cost now, probably more. And so that's a challenge. So, and then they gave the existing dry cleaners, I think, like a phase out period where, like, you have, you know, eight years, 10 years, whatever, to phase this machine out and get a new machine to upgrade so that you're not relying on PERC. And then I think it was last year in TSCA, the EPA under TSCA issued a rule. I don't know where that stands now, because many environmental focused regulations are getting overturned, canceled, etc, currently, so don't know to be determined, but at the end of last year, the EPA issued a final rule prohibiting and prohibiting and or restricting, and I'm a little fuzzy on the details. I don't remember it the the use and disposal of PERC. So, yeah, so that was sort of, I think it was kind of piggybacking on the New York law, but making it federal, so across everywhere. So, you know, it is a tide that is turning again. Hopefully, if that stays in place, I don't have a lot of confidence that it will, but to be determined. And so, you know, I think progress happens in these spaces, but it's really slow. CO₂ to dry cleaning is really hard to find. It's really, really hard to find. There's not that many places in the entire country that offer CO₂ cleaning. It's also referred to as wet cleaning. There is sort of also, I just want to point out, just so that people are not confused when you see a sign at a dry cleaner that says organic dry cleaning, what they are referring to is organic chemicals, just chemicals that have carbon in them.

KS

Kendra Seymour

1:06:25

Right.

LA

Lara Adler

1:06:26

That does not mean any have any bearing on whether or not is toxic or not. So it is a play on words. It is a tap into people's desire for something that is, quote, natural or perceived to be non toxic. So when they say organic dry cleaning, you have to ask the right questions and say, like, can you explain what you mean? What are the chemicals that you use in this facility to dry clean clothes? And do you have any like, you know, disclosure documents that you can share. Some dry cleaners are using silicone based cleaners, D4, D5, these are suspected to be endocrine disruptors, so maybe a little better than PERC, but still not something that I would call a clean dry cleaner.

KS

Kendra Seymour

1:07:14

Yeah, a couple of points I want to address. Like, I'm glad you brought up, you know, hearing that word organic, or sometimes, oh, natural, that must mean better well, like, arsenic, natural folks.

LA

Lara Adler

1:07:25

Absolutely.

KS

Kendra Seymour

1:07:25

So, it's about asking the right questions. And I think, too, you gave some really accessible points, like, maybe I don't need to dry clean this. Maybe I don't need to dry clean as frequently. Because I think one of the cities I saw, you know, it was two, like, within it was two weeks after bringing home the dry cleaning, there were still detectable levels in there. And if every two weeks you're doing your dry cleaning, that's just a constant, right? And so, so there are things we can be intentional about. I once did a really great interview with Ashley Spanovich from Awakening Spaces. She has wonderful stuff, and she said something that I think about often, and she's like, your front door is your biggest filter, and when you start to think about it, is like, what before you bring it over the threshold of your home, ask yourself, Is there, like, a healthier substitution? Is this needed, like, all of these things, just to stop and just to be a little bit more intentional, you know, and sometimes, and you know, we maybe we touch on this a little bit at the end, but, you know, when we talk about, like, effective cleaning, and people think that clean has a smell, clean one does not have a smell, and you don't need harsh chemicals, soap and water, like a non toxic dish soap is very effective, or effective, excuse me, because of the surfactants and the water, and that can do a whole lot, but that is not how we have been programmed to think.

LA

Lara Adler

1:07:26

Right.

KS

Kendra Seymour

1:07:27

Walk down the grocery store, we see all these, I don't, you don't need 17 products for for each task in your home. So we can, we as consumers, have control over some of those things. It takes doing a little bit of homework, and it takes asking the right questions. But you can, you know, if you approach your home, what I'm bringing in, what I don't bring in, and you know, is there a better choice? If this is the best choice, then, so be it or if, like, I'm happy, whatever, that's your choice then. But let's just be more mindful and intentional. So I want to talk about kind of as we wrap up a little bit. Those were some bigger purchases, ones that most of us have to plan for and but are there some things that you know, quick wins, low hanging fruit, two or three things that people could start doing today that you think would significantly, or not even necessarily significantly, but gradually reduce their exposure to some of these synthetic chemicals that are settling out in their dust and in their air?

Lara Adler

1:09:39

Yeah, I mean, I think there's a ton of things that we can do that are what I kind of categorize as being free and easy, meaning they don't cost any money, so we don't have to, like, go out of our way to buy an expensive thing or gadget or whatever. And they're easy. Anybody can do them. And the first one is open your windows. Like you're all about cleaning the air right and having good air quality. And to what you had said earlier is that homes are more energy efficient. We don't tend to open our windows. And those chemicals that you know are in all of the materials that we have don't disappear. They're in our homes, and they are floating around in the air that we breathe. And so if we can open our windows, even if we live in an urban environment, the benefit there typically outweighs the risk. Obviously, if there's things like wildfires or you live near like a, you know, a waste manufacturer or somebody like an incinerator, obviously that may not apply, but for the most part, opening your windows is a really easy thing to do, taking your shoes off when you come inside, so that you're not tracking in pesticides and heavy metals and particulate matter from the road into your home, and this is especially important, one, if you have carpets, and therefore two, if you have babies or small children or pets that are walking around or crawling around on those lower surfaces, and those carpets are containers. They're sinks for all of those chemicals to get in there and and you know, there's actually been, have you not been able to find this again? I saw this study, I want to say 12, 10, 12 years ago, and I didn't save it, and I regret it. Something about it often is, there was a study that was they built a robotic baby, and they had a carpet, and they had this robotic baby with all kinds of sensors on it, walking across a carpet to see with sort of, quote, unquote, natural movement of disrupting the carpet fibers, of what kicks up in the breathing zone of the baby. And they were shocked. They were like, oh, wow, there's a lot of stuff. Chemicals that are, you know, and dust that are being kicked up just from the act of crawling on a carpet. So it's really kind of interesting, novel way to look at a real life scenario, or as close to real life scenario as you can get. So open your windows, take off your shoes, minimize plastics in the home is a great thing to just do across the board, micro plastics are an enormous problem. The more we research them, the more we find them in you know, pretty much every human tissue organ system that we have. We don't 100% know what the implications of that are, but we have early evidence that they are associated with increased risk of cardiovascular disease, heart attack and stroke. Certainly these micro plastics are like sponges for other chemicals. So you know, whether that's phthalates or the bisphenols or other chemicals that it might be in those plastics that are now have this like microscopic carrier into the body, that we actually have more of that exposure internally from the micro plastics themselves. So minimizing plastic use, that means, like, you know, not, first of all, not micro microwaving plastic. So no hot food in plastic. We're not storing our food in plastic. And then we're systematically phasing plastic out of the kitchen. Meaning, hey, if that like plastic pasta strainer that you're literally pouring boiling water through is kind of seeing, you know, seeing better days, maybe now is a good idea, time to replace it with a stainless steel option. Those black plastic spatulas, which are concerning because they're made with recycled plastic that can often be contaminated with flame retardants going back to that topic at, you know, swapping those out with wood or metal utensils. You

know, your kids don't need to be drinking out of plastic plates and eating or plastic cups and eating off of plastic plates and using plastic utensils. There are really good durable materials, like stainless steel, like a bamboo, maybe even or something like a corral type of borosilicate glass, incredibly durable materials. So there are better options. Another one would be increased house cleaning, which certainly nobody likes to do, but increasing dusting and vacuuming. We've been talking about dust a couple of times. We want to capture that dust and get it out of the house so no feather dusters, nothing like that that just kind of moves stuff around. We want to capture it and remove it, and we do that one by wet dusting, which is just take a cloth and get it damp, and use that to wipe down the surfaces, and then throw that in a pile. And when you have enough of them, you wash them, and then you use them again and again and again and again. Although microfiber, like single use microfiber cloths, like swiffers, do the job, they're also a single use non biodegradable image. You're real, that's going to end up in a landfill for like, a thousand years. So don't buy those.

KS

Kendra Seymour

1:15:04

Yeah.

LA

Lara Adler

1:15:04

I'm just, I'm just going to say, don't buy those.

KS

Kendra Seymour

1:15:06

Yeah, and we talked about the use of those for for more specific situations, certain remediation situations and things like that, where you need that extra particle capture, right? That makes the difference. But, yeah, it's definitely you always have to think of the trade offs for some of these things. And so I'm glad you brought that up. What about vacuums? Because fan of reducing dust through effective dusting practices and and good vacuuming, if it's a sealed HEPA system, because I think people like, I'll buy the latest air cleaner, and you can spend a lot of money and and my thing is, and I steal this from John Banta, he says, I think he's becoming more and more convinced that effective cleaning practices can do more for your air than an air purifier.

LA

Lara Adler

1:15:52

Probably, yeah.

KS

Kendra Seymour

1:15:53

You're removing them from the surface and stuff. So do you have any recommendations on vacuums?

LA

Lara Adler

1:15:58

Um, yeah. I mean, there are a really, really good, properly sealed vacuum. They're expensive, like they just are, you know, I don't think people, the average person, needs a remediation level vacuum. I think, you know, those are large, they're expensive, they're ungainly, they're not most people are just not going to use those. And I don't think that they should I think that most of the, not most me, some of the major sort of vacuum cleaner brands at this point do sell vacuums with HEPA filters, which is like, I think a minimum, the real challenge is in like, how well these vacuums are actually sealed, because they can be leaky. And that said any HEPA capture is better than no HEPA capture. So, like, I'm not a perfectionist when it comes to any of these things. I have a Miele vacuum that is HEPA. It is sealed. It's also like an \$1,100 vacuum that said that said I talked to a lot of people before I bought that vacuum, including a good friend of mine who said that she had a Miele, and she's had her Miele for like, 25 years, right? Her vacuum so much that when she got divorced, she was like, I want the vacuum.

KS

Kendra Seymour

1:17:17

I would be the same. I have the same vacuum, and I, and I took me a long time, like, we work towards that vacuum. Yes, you love it, and then that's where you have to weigh the cost. Like, if this vacuum then lasts 15, 20, some years, and I know that it's going to work better.

LA

Lara Adler

1:17:32

Yep.

KS

Kendra Seymour

1:17:33

Is that a better choice than a vacuum that is cheaper? Because you can Google the video, because it's they did, uh, some smoke tests with vacuums, right? And so they put, they used to smoke stick, the ethical smoke, and you can see the smoke go in and then it starts leaking out all the seams.

LA

Lara Adler

1:17:54

Yeah.

KS

Kendra Seymour

1:17:55

And so yes, even if it has a HEPA filter, the air that passes through that filter is, is, is undergoing HEPA filtration, but it's when we say leaky, that's what we're talking about, everyone, all those where the hose connects to the main canister, the main body, where all those seams have the potential to be leaky. And so that's where you want to kind of think. But again, it's a purchase to plan for. And one I think, is, is worth it.

LA

Lara Adler

1:18:19

Yeah, and you know, there, there are certified Miele repair shops, like I've already had to take my Miele in for repair, not because it broke, but because I didn't check to make sure that the end hose was, the bag was properly situated, and I just gummed up the whole thing. So that was a that was a bummer, it happened, but that, I know that there are local repair shops that can just say, like, you don't have to throw it out. Um, you know, I went through a lot of vacuums, especially because I've been through mold twice now, and, you know, have gone through like, that hell's gate. And you know, would buy a new vacuum, and then only to, like, get rid of it when I moved. Because I'm like, well, I can't clean that. I can't take that with me. Um, the one thing that I will say, like, as a gradient of like, if you can't afford a HEPA, fully sealed vacuum now that I think one of the best things you can do is not use a bagless, yeah, vacuum, because, and I've had bagless vacuums, and the emptying of the canister is like a redistributing of all the dust that you just sucked up. You have to take it outside, and you have to, like, shake it out, and it's just a nightmare. So, like.

KS

Kendra Seymour

1:19:33

And clean out the canister.

LA

Lara Adler

1:19:34

Clean the outside of the canister, yes, yeah, it's such a chore. And I think people like it, because they're like, oh, I can see all the dirt inside, yeah, okay, but I don't so, like, move away from a bagless if you can, and then move toward, you know, a HEPA vacuum, and then, ideally, a HEPA sealed vacuum, yeah, yeah. And buy a really good quality one that will last you for 20, 25, years.

KS

Kendra Seymour

1:20:00

Yeah, yeah, and this is just where, again, being intentional. What is your situation? Where are you at? Where do you want to start first? Where might be the high if you're dealing with a situation where you have serious mold and water damage, you need to address that first, right? Or, you know, paying your rent, or some of these things, like these things have to come first. So, again, small steps that this, this interview. Remember, everyone is part of the bigger series, and we tackle all sorts of different things throughout the course of the topics we're exploring this spring. But I know we are way over time, but you said to remind you, and I forgot to bring it up before we moved on about tort law. Do you want to kind of like, maybe, kind of end with that, and then we'll, we'll have you give your contact information if people have follow up questions. Yeah, so one of one of the challenging things that exists in the landscape of this conversation is proving harm, right? So the tort law. Tort law is a specific category of law that really relates to consumer harm. So like the famous McDonald's coffee burn. I can't remember the woman's name, she did actually suffer very significant burns. Her life was very much altered by that experience. People like to, like, kind of laugh off at that, like, oh, you sued somebody for hot coffee. All coffee is hot. No, their coffee was actually extremely hot. It resulted, I think, in like, second degree burns on her legs and, like, genital region because she was sitting in the car and the lid popped off anyway. So, like, that's tort law. There's a sub category called chemical torts. And chemical torts are where we have harm caused by some type of chemical, or, you know, the consumers think that it was caused by the chemical, and we want to hold companies accountable. And there's a couple of reasons why chemical industry loves tort law. And they love it because they're like, first of all, we have a lot of money and you don't. So if you think this stuff is so bad, this is the language that they'll always use to defend the use of the chemicals in their products. And they say, if you think they've harmed us, sue us. That's what the legal system is for. We have this wonderful legal system available to us, so please, I encourage you. I invite you to use it, knowing full well that they have enormously deep pockets with very aggressive lawyers and that the average consumer cannot go toe to toe with these corporations. The other sort of loophole that they lean on is that the chemicals that we have good data on that are result in some type of harm or increased risk of disease or what have you, are pervasive in the environment. So let's just take like bisphenols. Bisphenols, or BPA, as well as their replacements, FNF, are pretty ubiquitous. They're one of the highest produced chemicals in the United States. So if you feel that you have been harmed, someone has been harmed by exposure to say, BPA, who

are you going to sue everyone, every, all of the thousands of companies that use it. How can you prove that the BPA from the canned foods you ate was the problem when you're also exposed to BPA through your cash register receipts or your plastics in your home, or your dental sealant or all of these other places? And that weakness in the argument is what the chemical industries and corporations when we press in to because they say you can't, beyond a shadow of a doubt, prove that it was our company that caused the harm. And so those cases never move forward. They just don't. And so the few sort of very large public cases that we've had in chemical tort law, meaning the Johnson and Johnson case with asbestos and the talcum powder, or Monsanto for the glyphosate and leukemia for the groundskeeper that was applying it. Those cases make it to court, because in those instances, Monsanto, Bay, or whatever is the manufacturer of this product, there are not tens of thousands of companies that manufacture the real really only is one in the case of Johnson and Johnson, they own the Talc mines, so they really are the only one to sue. And so those are very unique cases, and now are pretty rare because of this weakness in the regulations the it's our job to prove something is harmful versus their job to prove something is safe. And so the chemical industry will often rely on those weaknesses while putting up and kind of puffing out their chest and saying, we want we welcome lawsuits, ye people of the world, yeah, but knowing full well that no one will be able to take them down. And if you're listening and you're thinking, well, it's this way because there's no other way to do it, there are other countries around the world, and if you're in Europe, they are doing things differently. Ran out of time to talk about that some of the other stuff, if you're interested, but it's not, yes, it's challenging. It's not that we can't do that, but it requires a big shift that we as consumers are going to have to push for with with who we, you know, vote for and vote into office, things like that. We won't get into it. But it's not that we can't do it.

LA

Lara Adler

1:25:39

Absolutely, absolutely.

KS

Kendra Seymour

1:25:40

And I think that's what's sometimes hard so but again, all about making intentional choices. Lara, this has been wonderful. If people had follow up questions, can you tell us your website and social media, how they can find you.

LA

Lara Adler

1:25:52

Yeah, absolutely. My website is just my name, Laraadler.com, and my social media. I'm most active on Instagram, and my handle there is @environmentaltoxinsnerd, so feel free to pop in let me know that you know you came from the podcast, and then I'm happy to answer questions as people have them. So.

KS

Kendra Seymour

1:26:11

I love it a wealth, a wealth of information. This has been wonderful. And for everyone listening, if you found this information helpful, if you want more interviews and tidbits and things like that, because we have a whole series coming about this topic from different angles, from different IAQ professionals and healthcare practitioners and people who have you know experienced symptoms as a result of some of these exposures. Please head on over to changetheairfoundation.org, and sign up for our newsletter, because it really is the best way to get great information like this directly to your inbox. We'll see you next time. Thanks so much.