



Safer Flooring Choices for Your Home

Interview With Andy Pace

SPEAKERS

Kendra Seymour, Andy Pace

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Andy Pace

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The number one releaser of formaldehyde in anybody's home, though, is always carpeted, and that's because formaldehyde is a key component, usually in the dyes of the actual carpet fibers themselves. And so while manufacturers will say, we don't add formaldehyde in a carpet, they may be telling the truth. They don't add formaldehyde, but their fiber and dye suppliers do, and we sometimes find out the hard way, meaning everybody in the house gets sick because of formaldehyde exposure, and this is how it comes out that there's formaldehyde in the carpeting.

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Kendra Seymour

00:39

Hello everyone, and welcome back to Your Indoor Air Podcast. My name is Kendra Seymour, and today we're going to drive into part two of our conversation with building materials expert Andy Pace. Now if you missed the Truth About VOCs, Green Washing, and Healthy Homes Part One, be sure to go back and give it a listen, because we cover a lot of foundational information about creating healthier homes and choosing healthier building materials. I'll link to it in the show notes. But in this episode, we're going to continue the conversation, and we're going to call this the flooring episode, because we're going to talk about everything from wood flooring to tile to concrete to carpeting, and the pros and cons of each of those options and what you might need to consider as you're making choices for you and your home. So Andy, I want to thank you so much for being here. For those who don't know Andy, he brings decades of experience and a deep understanding of what truly makes material healthy versus maybe just what is green washed. And he has a real talent for breaking these things down, I think, in a way that is very practical and empowering for the listener. So whether you're remodeling or you're building or you just want to make some healthier, smarter choices, moving forward, I promise you're going to get some real actionable flooring tips in this episode. So Andy, thanks so much for being here.

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Andy Pace

02:00

Oh, Kendra, absolutely my pleasure to be here with you.

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Kendra Seymour

02:03

Now, before we jump in, I do want to take a moment and say thank you to two of our sponsors. Those are Celtic IAQ and Home Safe Mold Inspectors of NWA. Now we appreciate these companies, really, all of our sponsors, so much, not just because their generosity helps keep our resources free and available to the public, helps us, you know, advocate for better laws at the state and federal level, helps fund our research, but because they have a real commitment to the clients and the people they serve, and it's so refreshing to see companies that really prioritize the health of the people that they're working with. So huge thank you to them. If you want to learn more about them. You can head on over to ChangeTheAirFoundation.org, and click on our corporate partners tab. So Andy, let's, let's jump in, because I know we're going to run out of time. You have so much great information, but let's kind of start with some basics. So when it comes to let's start with flooring. You know, we often think of choices like carpet or wood, maybe vinyl tile, even polished concrete. So what are some of the like the VOCs and hazardous air pollutants in these products that we're trying to avoid? I mean, after all, that's why we're having this conversation,

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Andy Pace

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Right, you know, I think when a client approaches me about flooring, the question I usually ask is, well, what would you like to have? And I start with that because I believe we all have different reasons why we like different flooring materials in various rooms of our home. I can argue that of everything you've listed so far, carpet, tile, wood, vinyl, what have you, you can find healthier versions of all of these materials, and you have to kind of weigh what's most important for those rooms. So generally speaking, with any of these materials, the number one issue we deal with is formaldehyde release. Formaldehyde will be part of a flame retardant or part of a curing agent or part of an antimicrobial that can come off the surface. It could also be naturally found in certain things like hardwood flooring, although at very, very low, almost undetectable levels. But the finishing process of a hardwood floor would certainly introduce lots of formaldehyde into the mix. The number one releaser of formaldehyde in anybody's home, though, is always carpeted, and that's because formaldehyde is a key component, usually in the dyes of the actual carpet fibers themselves. And so while manufacturers will say, we don't add formaldehyde in a carpet, they may be telling the truth. They don't add formaldehyde, but their fiber and dye suppliers do, and we sometimes find out the hard way, meaning everybody in the house gets sick because of formaldehyde exposure, and this is how it comes out that there's formaldehyde in the carpeting. So that's the number one

issue we deal with, with any floor material. Specifically or most problematic in carpeting, but we do see it also in some hardwood floors, specifically engineered hardwood floors, where the plies are glued together using an adhesive that contains urea formaldehyde. We don't see it as much anymore in vinyl floors or in the luxury vinyl plank floors, because the core is now a limestone and plastic blend, and not MDF or cork, and so that's really eliminated the urea formaldehyde coming from that material. And so I guess I can say things are getting much, much better than they were 30 years ago we had one flooring material to choose from, and that was Frobo Marmoleum. It was the safest product made in the world. It still is one of the safest products made in the world. Absolutely gorgeous product, but now you have more choices.

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Kendra Seymour

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Yeah, and that's, and that's why we're, you know, the benefit of that is more choices for your health, but also more choices for your bank account, right? Most of us don't have, you know, endless piles of cash, especially if we've just gone through remediation or we're taking care of some other stuff. We have health costs often out of pocket. And so it's about making the best choice for our situation, knowing that, you know, none of us have it perfect, right? So we're going to break down each of these options for those listening. But is there like and maybe this is a loaded question, because we like to talk about things at the foundation in terms of the pros and the cons, and that's kind of how we'll go through everything. But if you were to put the different flooring options on a spectrum of health, is there one that kind of or two that kind of come out at top, and then some that kind of come out more towards the bottom. Or is that not really a fair way to think about it?

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Andy Pace

06:47

Well, it's it's actually a decent way to look at things, understanding that there's always going to be a spectrum within it, but I will tell you that concrete, a concrete floor, either a polished concrete floor, which is a very labor intensive, time consuming process, or what is deemed poor man's polished concrete. I like that, that term, but what it means is they basically just clean it and seal it, and you kind of get the same look, but it's not the same durability. But in those situations you're dealing with, if you have a slab on grade concrete floor, well, that becomes your finished floor as well. And so from a standpoint of cost, you can't beat it. You're talking you know less than \$1 per square foot all in and you instantly know if there's moisture coming through the floor where you wouldn't with other flooring materials. There's really no chemical off gassing to deal with anymore, because the sealers, I'd recommend something like an AFM SafeCoat Mexeseal, because it does not off gas whatsoever. And so at that point, it's a an inert floor with easy visibility if anything is going wrong with the slab. The downside is it's cold, it's uncomfortable. But those are those decisions you have to sort of weigh to see which one you want to go with, a step up from that might be something like a natural linoleum, a glue down marmoleum product. It's actually a fairly

sizable step up in terms of price, because a glue down marmoleum floor. Although it's only about an eighth of an inch thick, it's designed to last 50 years in a commercial space in your home, your the home will probably fall down around it. It's so durable, it's naturally antibacterial and anti static because it contains linseed oil, there is no chemical off gassing whatsoever. It's the same color and pattern all the way through. So if you do scratch the surface, it can be repaired. There is really almost no downside to it, except you may not like the look of it. It has a very old fashioned look, and some people just say that's just not for me. I understand that. You also have to understand that because it's glued down to the concrete, you now have to be a little more concerned about moisture, vapor transmission, and so before you do a glue down floor on a concrete slab, you most definitely have to do something like a calcium chloride test to determine vapor transmission, so that you don't run into a situation where moisture in the concrete is trying to come up. It gets blocked underneath there, and now you have a perfect environment for mold development, the possibility the flooring peeling off of the of the concrete, it becomes a real mess. So do your diligence before the project, and then to ensure that that product lasts as long as it can.

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Kendra Seymour

09:53

Yeah, and I'll just jump in because we that. I've seen that happen too, even with like wood or engineered when you have like a slab foundation or if you have a basement and you're putting you have to be very cognizant that you're not trapping in moisture, that you're aware of those things. And so that's good to know. Okay, so, so what, what? How else would you rank the rest of them then?

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Andy Pace

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Yeah, so then from there, you have a series of either floating floors. You can do a floating linoleum floor. You can do a floating wood floor. Again, we're talking about slab on grade situations. If it's an elevated wood deck with a basement below or the first floor below, you could then do a traditional nail down type wood floor. There's the pros and cons to the wood floors are durability. It has more sound deadening than concrete or natural linoleum. It gives you more of a warmer feeling. It's warmer underfoot than those other materials. It can be refinished. Most of them can be refinished unless they have a very, very thin veneer. At that point, you can do what's called a buff and recoat, essentially get rid of the scratches and refinish. You have your whole choice of styles and colors and species. There's a lot to choose from there. And there are hundreds and hundreds of manufacturers, including local mill workshops that just produce, you know, ready to finish nailed down wood floors. And so it's really one of the most sustainable materials that you can find, because I'm here in Wisconsin, and it's, you know, trees up north that get harvested and brought down here to the southeastern Wisconsin for flooring. You really can't get much better than that from a sustainability standpoint. So there's a lot of a lot of pros to that. Cons. Well, if you're in a situation with higher moisture situations, slab on grade, there's always a possibility of moisture causing a mold problem

with a wood floor, or causing cupping or curling because of that moisture. There's also the situation where people with extreme sensitivities, with mast cell activation syndrome, can react very strongly and severely to natural wood, because wood contains natural sugars and terpenes, and those can be extremely problematic for anybody with MCAS.

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Kendra Seymour

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Yeah, and this is where I think the message here is that this is can be a very individualized process. And if somebody has multiple chemical sensitivity, you really need to go by the person who's most sensitive, because you would think, Oh, wood, it's all natural. That's going to be my healthier choice. And for many people, that's a great choice, but if you're reacting to some of the natural components, then that's not going to be the best choice for you, so.

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Andy Pace

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Yeah it's 100% accurate, and we have to remember that. You know, in a household of four people, statistics say that one in four will have these types of sensitivities, and they may not know it yet, or they may not attribute it to these materials yet. But this is what the statistic is, 25% of the population. So it's very, very common for one person the home to say, I cannot be in this room. I cannot enter into the home anymore because of the materials that were used. And the rest of the family says, oh, you're nuts, you're crazy. No, it's not. It's a serious health issue. And we do have to look at this very, very closely and understand that the best option moving forward may not be the most obvious. You know, people will say to me, as you say, well, wood flooring, it's all natural we should use that in our house. I guarantee you that if I sent samples of wood flooring and samples of luxury vinyl plank to 20 people around the country with MCAS, 19 out of 20 would prefer the luxury vinyl plank, because it really has no smell whatsoever.

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Kendra Seymour

14:00

So it really comes down to, I mean, it like, what you're trying to avoid, what your triggers are, what's in your budget, the you know, home, like, what is this a slab foundation? Where are you putting the the building material? So kind of rounding it out with the pros and cons, because then we'll dig into each specifically, what about the pros and cons of carpet and tile?

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Andy Pace

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So tile is pretty simple. I have done numerous homes, the entire home being tile. I always recommend porcelain tile versus ceramic. The reason is, is that all porcelain tile really is ceramic, but not all ceramic is porcelain. Porcelain just means that it's of a higher density and less problematic with moisture. So less moisture absorption, more durable, and it's usually what's called a through body. So it's the same color and pattern throughout where most ceramic tile actually is just a color or pattern on the surface. If you chip the tile, you expose then the gray or the terracotta color base, and so porcelain, we better in that situation. It too is a hard and cold floor like concrete. However, it a good porcelain floor never requires sealing. It is going to be resistant to not only your simple stains and moisture, but also even things like cooking oils. I did a car an auto dealership years ago with porcelain tile, and they took a quart of motor oil and poured it on the floor, and it sat there for an hour while we were discussing this and that, and the motor oil never got into the tile. And so if you're looking for a very, very long term, durable solution to flooring, that is definitely one. With that, the cons would be you have to make sure that the setting materials, your thin set mortars and your grouts are chosen wisely, so those don't contribute to any indoor air quality issues. But that's a pretty simple thing to go through to make sure we have the right ones. And now carpeting. Carpeting is probably one of the more controversial flooring materials that we have. I think all of us love something soft underfoot when we wake up in the morning. I'm here in Wisconsin, and when it's 10 below zero in January, I don't care how warm you keep the house, boy, a cold floor is a cold floor. And so you know having either carpeting or an area rug is really helpful. There are completely chemical free synthetic chemical free carpets on the market. There's a brand called Earth Weave. There's another brand called Whitfield Naturals, another one called Nature's Carpet. They all make chemical free or synthetic chemical free carpeting. The downsides are they're made from wool mainly, and these are wool carpets that are not true to the pesticides, and so you have to be much more careful about keeping the floors dry and clean so you don't get moths, number one. Number two, some people have severe mold sensitivities, so that's a problem. And number three, wool carpets are generally more expensive than your traditional plastic carpets. Yes, they do last a lot longer. So it's an investment, but that initial investment is sometimes too much to handle. And so with your plastic carpets, there are some brands in the market that are considered better from a VOC standpoint. But as we talked about in the previous episode, VOCs really don't have much to do with indoor air quality from a human perspective. They have to do with outdoor air pollution. And so what I worry about in with carpeting, specifically with plastic carpets, are the formaldehyde emissions. And I have tested many brands of so called eco friendly green plastic carpets, that's still off gas toxic levels of formaldehyde.

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Kendra Seymour

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Yeah, yeah. So let's, let's start digging into some specifics, and you can make some recommendations then on each of these now that we kind of have a general sense of pros and cons. So let's talk about like hardwood floors. I feel like that's been a very popular option for a long time. When people go to upgrade, that tends to be a go to so talk to us like, first maybe, can you explain the difference between like hardwood and engineered for people who don't know? And then take us through like, how are we making the healthiest choice possible? Because it's not just the product. Like, if there's glues and adhesives, we need to be aware. So kind of take us through that selection process. If we're going that route.

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Andy Pace

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Sure. So there are three main types of of hardwood floors. First is your solid lumber hardwood. So it's just a solid piece, either five eighths of an inch or three quarters inch thick. It's routed tongue and groove to be nailed or stapled down to the substrate. That's essentially a piece of high quality hardwood lumber that is used as flooring materials. This is what we all know in homes that are 100 years old, that still have those original maple floors, that are still in great shape. But this type of flooring material is becoming a little more difficult to procure, sometimes just because of the availability of lumber, and we have to deal with the fact that it needs to be site finished, so that means sanded and finished in the field, which leads to a lot of dust, a lot of chemical emissions. There are healthier, rated ways to do things, of course, but that's just, you know, one of the side notes of that. So manufacturers develop what are called engineered floors. Engineered floors are simply a multi layer wood floor, five eighths of an inch or three quarters of an inch thick. That's essentially, it looks like plywood. The top surface is then the species or the brand you're buying. So if you want white oak, the top eighth inch, roughly, is going to be your wearing surface. That'll be the beautiful white oak. The rest of it will be some other mixed hardwood species, and most often these floors are pre finished, factory finished, so you don't have to worry about dust. You don't worry about chemical emissions in your home. The caveat there is making sure you get finishes that are, what are called UV cured that UV curing process essentially bakes out in the manufacturing plant. It catalyzes all the chemicals so there is no chemical off gassing in your home. So solid wood, then engineered wood, then what's called veneered hardwood. Veneered hardwood is essentially a plywood or an MDF core, and on the top surface is a very, very thin veneer of wood, roughly 1/42 of an inch. This is more of your lower cost flooring, typically because you're using less of that expensive hardwood species on the surface, but can also be some of the most durable floor flooring materials you can buy, because the core is incredibly hard, harder than plywood or harder than solid wood. So some of those floors can actually have a longer lifespan, but you have to worry about scratches and gouges. Scratches can be buffed out. Gouges have to be repaired, like a piece of furniture, so it's a bit more involved. So those are your three styles, your solid wood, your engineered wood, and then your veneered wood. With all those three styles, you can get either

a nail down, glue down, or a floating version. Also with solid wood and engineered you can sometimes get pre finished or unfinished. And so I like to look at this as you know, what is the what's happening in the home? Is this a new home under construction? If so, I don't mind going with a wood that requires finishing and sealing on site, because the family's not living in the house at the time. If it's a remodeling and you've got people in the home and other rooms, I'd rather you go with a pre finished material so you don't have to deal with that.

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Kendra Seymour

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Yeah, so do you have some favorite brands that healthier brands for each of those, just so that people can start looking into them, if they're if they're considering that route.

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Andy Pace

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Certainly. So with hardwood flooring, with a solid hardwood floor with an unfinished there really is no brand per se. It's because it's sold more like lumber. And so with that, you would go to a local lumber yard, a flooring supply store, even the big box stores will have unfinished, solid flooring lumber. But I would definitely recommend something like the AFM SafeCoat, their DuroStain Pro and their Polyureseal BP, as your top coats, because I know those will not chemically off gas whatsoever. Or if you'd like something a little bit more easy to maintain, a product like Rubio Monocoat, which is a penetrating oil sealer. This is kind of an old fashioned way of finishing wood floors from 100 years ago. You'd oil the floor that oil soaks into the wood, and as the oils polymerize or swell, they actually fill up all the pores, the micro, macro pores, of the wood, and it actually causes the wood to harden by about 25% so now your floors are more durable. I will say your floors will scratch easier. However, it's very simple to fix the scratch for anybody. It's a little bit of the oil. Wipe it on. Wipe it off. You're done. You don't have to refinish a large area to feather it in to make it look good. I also like the fact that the oils are a lot easier to apply even at the start. It's a quicker installation. It just takes longer for it to cure, so you have to weigh that in the process, but either of those methods would work great. For engineered wood floors, lots of great brands out there. I do a lot of work with a company called CALI Floors out of California, and CALI Floors has pre finished hardwood, bamboo from all over the world, and most of theirs will be engineered types, although are pre finished, some can be floated or be nailed down. And again, you're not dealing with the dust and of the installation process, the sanding, the finishing. Anyway, great company, CALI Floors. There are other brands as well. I mean, Kahrs out of Sweden is a great brand. The all their floors are floating floors. And then there are some more exotics out there. Carlisle makes a fantastic family of wide plank hardwood floors that can be pre finished or unfinished, but they're all engineered because they're really wide plank you want an engineer product so it doesn't cup or curl with moisture. So really good product.

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Kendra Seymour

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Yeah, awesome. That's super helpful. And we'll try to link to some of those in the show notes so people don't have to hunt. So then let's talk about, I know. We built our house a long time ago now, and luxury vinyl planks, LVP, there's some different names. It's gotten some interesting press over the years. When we were picking our flooring, there were like 15 options. We wanted real wood or engineered wood, and we only had three. So I didn't like it as much, but we went with that over the LVP. All of my neighbors went with LVP. So like, let's talk about luxury vinyl planks. Like, what? What do we have to know there, because there's been some interesting press and health and help us kind of understand that product and how it's evolved, and what that might mean if we're thinking about it for our for our home.

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Andy Pace

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Certainly, well LVP, or luxury vinyl plank flooring, certainly has become the darling of the flooring industry. And the reason is, is because, first of all, it meets a price point. Usually, LVP is gonna be less expensive than going with a hardwood floor or even a porcelain tile floor. It gives you the look of wood, but it gives you more of the durability or or it's more maintenance free, I'll say, than wood is. So it's become very, very popular, both in remodeling and in new construction. I've walked through multi million dollar homes built in the last few years with luxury vinyl plank flooring, because even the the building owners understand, you know, people want ease of maintenance. They actually want no maintenance. And so you've got three kids running around the house with soccer cleats on, and you hope they don't have soccer cleats on, but if that was a wood floor, it would be destroyed. With a luxury vinyl plane floor, most often, you might have a few scratches, but it's not a big deal. So they require very little maintenance, and you don't have to worry as much. Also, there's the the knowledge that most often these floors are considered waterproof. And what I mean by that is not that it's if you get a flood in your kitchen floor from your dishwasher. It doesn't mean that water will not get through. It just means that if you get the get to the water in time, and if you take up the floor in time, you're not going to have a damaged floor. The downside is, people rely on that waterproof nature too much, and if they do have a water events, they don't understand that water is underneath the floor, just wreaking havoc on the subfloor. And that's when you run into severe problems with mold and warpage and whatnot, but it's just the luxury vinyl plank product has really gotten a lot of good press from this. The downside about luxury vinyl plane floor, I would not want to be in the manufacturing plant. I would not want to be making this stuff. Vinyl, even though most of the LVP products in the market today, and I know for sure the CALI Floor product is completely free of formaldehyde release, completely free of phthalate release, so there's no endocrine disruptors coming off of the floor. But that's when it's at a cured manufactured state. In the manufactured facility, I would not want to be one of those people. I think it's, if it was up to me, I would not want to have any vinyl manufactured ever again because of the of the state of the manufacturing. So, my personal opinion is, I wouldn't use LVP because of that.

Because I just I have too much empathy for the families of people who have died because of their exposure to toxic chemicals in the vinyl manufacturing process. So the guilt would get to me, but as a business owner, when people come to me and say, I have \$4 a square foot to spend, I can't afford any more than that, and I have MCAS, and I got to buy something that anybody can install. It doesn't take a factory trained rocket scientist to put this stuff in. LVP is a great choice for them. So I do feel good knowing that I'm making things better for them in their house. I just won't use it in mine. And so that's kind of how I justify it.

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Kendra Seymour

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Is that a product that has changed or evolved over time, or has it always just kind of been made the same way it's always been?

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Andy Pace

29:04

That's a great question. It actually has evolved over time. Matter of fact, in the last couple of years, it's evolved very quickly. It used to be that vine, these, these vinyl plank floors. First of all, they used to be glue down they they called them luxury vinyl tile. It was a glued on material, basically a harder version of a roll of vinyl that you used to put in a kitchen or a bathroom. Rule of thumb with vinyl is, the harder it is, the safer it is. Just as a good note, when you think about hard vinyl floors, hard vinyl windows, they don't off gas nearly as much, or at all, compared to their their counterparts from 20 years ago, they were very, very soft and flexible because of all the plasticizers. Anyway, with vinyl plank floors, the idea of making it a floating floor means that they have to construct it out of not only vinyl, but then a core of material, and that core used to be Medium Density Fiberboard, and Medium Density Fiberboard has to be held together using some type of formaldehyde resin and so and because fiberboard was more flexible, the vinyl on top had to be a little more flexible too. So the whole all the material was subject to some off gassing issues. As the what's called a WPC or SPC, a wood plastic composite core, or a stone plastic composite core, as those were invented and then introduced into these floors. The floors have become more just inherently safe, because now you can use harder vinyls. The core themselves are completely free of chemical off gassing. And so now you just need to make sure you find a manufacturer like a CALI Floors that says we do not have any endocrine disruptor release from our products, and that's verified with third party testing. And so that's really the big issue you have to worry about these days, but compared to 20 years ago, vastly different.

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Kendra Seymour

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Yeah, yeah. And, you know, I love innovation in the sense that, you know, there's opportunities for products to improve and become healthier, more cost effective, and so who knows what we're going to have in another 20 years. But before we move on to carpet, I know, and I've seen it on your website. You talk about cork and natural linoleum. Can you highlight some considerations for those for us and.

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Andy Pace

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Certainly, so, cork is an absolutely amazing building material, and it's been used as flooring now for well over 100 years, probably longer. Here in the United States, some of the oldest banks and office buildings in the United States still have the original cork floors. Banks and libraries really because of its sound deadening ability. Cork is naturally antibacterial because of the the natural chemical ingredients in cork. Cork is a great sound deadner. Cork is actually very, very waterproof. Think of a wine stopper. You know, wine won't get through it. In other parts of the world, they actually use cork wall coverings in showers because of of how moisture resistant it is and antibacterial. It's also a nice warm shower too, instead of a cold ceramic tile wall. We work with a company called Wicanders. And Wicanders is the largest cork manufacturer in the world. They're based in Portugal, and they have a product called wood wise. Wood wise is essentially a cork floor. 98% cork in the top surface is a recycled PET which is a plastic water bottle material. There's no phthalates whatsoever. There's no formaldehyde release. An incredibly safe material. It actually has the graphics and texture that look, I think, the most realistic, compared to all vinyl floors in the market. But then you still have the benefit of of the fact that it's cork, so it's going to be softer, more comfortable, more sound deadening. Really a great product. I definitely have you look at that. And then with natural linoleum I mentioned before, it's a blend of linseed oil, pine resin, wood, flower mineral pigments and spread onto a jute backing, you really can't get much more natural than that. It's been made in the exact same manufacturing plants as it was since the 1870s all found in Europe. That's because that's where the world's supply of flax plants are. And so that flooring material has really become a the number one floor of choice. For people who are looking for ease of maintenance, you have to get around the fact that it looks like natural linoleum, so it has a unique pattern and color to it. But also, because it's so unique, a lot of people love it, because you look at the floor and you see it kind of looks like stone, but it's not, and it's, it's just absolutely gorgeous, I think. We use it in both a sheet good and a floating version. We even used it for services like desktops, countertops, chair tops. It's an amazing material.

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Kendra Seymour

34:14

Yeah? And, you know, I think there's, there's a lot for people to consider here. It's about understanding the pros and cons and making the best choice, and I'll mention it now, but this is true for any product,

especially if you have multiple chemical sensitivity, or somebody who's more sensitive, ask for a sample of the product ahead of time, sniff it the you know, sometimes the adhesives and glues and things like that, and see how you do and have that be part of your decision making too, before you install throughout your whole home. You know, you kind of do, the sniff test and see how you do.

AP

Andy Pace

34:47

Well. And I'll tell you too again, I mentioned this before, and I'll certainly say it with this marmoleum or linoleum, cork, they have definite strong aromas. Because of the linseed oil in the in the linoleum. Linoleum is a compound word that essentially means linseed and jute. It's going to smell like a wood shop. It's going to smell like linseed oil forever. Every time you wash the floor, it re emulsifies that aroma. With cork, cork contains a natural SAP called subaron, and that is the quintessential aroma of cork. Now, cork is the bark of the cork oak tree, and so it kind of smells like wood SAP. For most people, linseed oil and wood sap would smell kind of pleasant. For anybody who has MCAS or chemical sensitivity any type of immune system disorder where strong aromas can trigger a really severe reactions. If again, compare cork, linoleum, wood and LVP. Most often people choose the LVP because it has no aroma. And this is where I say, and you'd mentioned it a few times, and I appreciate this. You really have to test for your own personal tolerance and making sure you are choosing for you. You're not choosing for what you think other people think is the healthiest floor. You know, I get that question all the time, what's the house healthiest floor I can put in my house? I have no idea until I know the customer, until I know what we're doing with health wise, and what's the triggers and so forth. I can't give you. I can say all of these can be healthy, but may not be. So yes, testing samples will greatly, greatly help.

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Kendra Seymour

36:36

Yeah, yeah, absolutely. All right, so let's talk about carpet then. For some people, that is an option. For cost, maybe the main floor, they do some sort of hardwood or something like that. But then upstairs, with the bedrooms, they want carpet. Carpet is one of those things, not just the actual material, but you have to keep in mind maintenance cleaning, because dust and anything that's in your air will settle into your carpet. But are there for people who want to go that route, like, are there specific brands or things we want to look for that might be healthier? I know you kind of touched on some stuff before.

AP

Andy Pace

37:09

Yeah, so it's it comes down to a couple of things. First of all, as you say, people want something, you know, underfoot in a bedroom. But you know, bedrooms should be the absolute healthiest room of the home, always! We spend, hopefully six to eight hours every night sleeping, trying to get restorative sleep. If we're

being inundated with chemical emissions from the carpeting or from the bedding, if we're being inundated with EMFs from devices around us, there's so many things in a bedroom that could cause us to not get good sleep. So if you eliminate the carpet, and I tell people all the time, if you can't afford to take out the carpet in your bedroom and put something else down, then just take out the carpet, live on the sub floor until you can afford flooring, because the sub floor, I guarantee, will be safer than the carpet itself. And I'm speaking in generalities about the traditional plastic carpets that are on the market, nylon and polyolefins and so forth. There are synthetic chemical free carpets from Earth Weave from Whitfield, from Nature's Carpet that are made of pure wool, cotton, jute and natural latex, right from the rubber tree. Now understand all of those can have their own set of issues with your own personal allergies and sensitivities, but I will tell you they will not have synthetic chemical release. So we've got that taken care of. If you have an existing carpeted floor and you really have no choice, we can't afford to take it out and replace it. We just have to do something in that bedroom. What I'd recommend is, well, a common company I've recommended before, AFM SafeCoats. AFM actually has a carpet shampoo and seal system that will detoxify carpeting between 60 and 80% and this is a remarkable achievement with carpeting, because I've tested carpeting that's over 30 years old, that's still off gasses formaldehyde at levels of four to 500 parts per billion. You know, the safe level is 20 or less. So we're now, you know, 20 to 100 times higher than that. And so, using the SafeCoat shampoo and sealer, we can reduce that off gas in 60 to 80% and we talk about reducing off gassing or trying to live in a healthier space. We never really strive for perfection, because I don't think perfection is possible. We strive for tolerance. And so I know that if I can reduce my off gassing of the carpet by, at the worst case scenario, 60% and I've used safe finishes on my walls, and I've done better with the cabinetry, and I'm all doing all these things in the house to reduce, reduce, reduce. Then we don't have to have so many things that are absolutely perfect. We're reducing the overall chemical load and that's really the goal here. For some of our most sensitive clients, where reduction is not good enough, where we have to, we have to get lower than that, then we will push for these things a little bit stronger. But on a home, there are many, many ways that you can reduce the overall chemical emissions of a new home or in a remodeling process. Carpeting is one of those areas where you can make a big impact right away. Take out the carpet and now your formaldehyde numbers plummet, literally overnight and so with this, you know, again, I'd rather have you live in that subfloor, understanding that the subfloor can probably be vacuumed easier. Carpeting is a haven for dust and dust mites. Wool carpeting actually repels dust and dust might look better, it repels stains better, but again, you're paying for that. That's going to be at least twice the cost of a good quality plastic carpet.

KS

Kendra Seymour

41:09

Yeah. And if you're listening, folks, listen like you don't need to panic, like we live in the real world. And I want you to know, like in my home, and I've actually talked to Andy about this, we have carpet upstairs. We've been for years to replace it, and you know, we're okay and we're making healthier choices. So we understand that not all of these things are going to be accessible right away, but as you make plans for

your future and going forward, these are things to be cognizant of. All right, so let's talk tile. I know you talked about it briefly, but it's not just tile, it's the grout and things like that. So help us, like, understand, you know, how we're going to make some healthier choices here. There can be other things, like lead. Do you think about that at all when you're when you're selecting the tile, the grout? What's the maintenance look like? Different types of grout? Help us unpack that a little.

AP

Andy Pace

41:59

Right, so the first question I ask is, if somebody is interested in tile, is, what are the main driving factors for wanting tile in the house? Some people say it's because we've got three kids with soccer plates, you know, we want to make sure that it's indestructible.

KS

Kendra Seymour

42:13

And dogs or something like.

AP

Andy Pace

42:14

Exactly, yeah, yeah. And that's the thing. It's like, if somebody's really looking for the almost indestructible flooring material, concrete or tile, will be right up there. Anything else will have a tendency to get damaged with with that type of abuse. The downsides, of course, it's hard, it's cold, it's slippery, but let's just move away from those for a second. With tile, if you choose tile that's manufactured either United States or in Italy, chances are the tile is not going to have any lead in the glaze. Lead can still be in the glaze in tiles that are made in other parts of Europe or in Asia. And so I like to stick with tiles made in the US or in Italy. Understand that even if there was a slight amount of lead in a glaze, you would have to actually get down your hands and knees with a metal file and start scraping that to get that to release. And so you have a you would have a better chance of actually being exposed to lead, probably in your bathroom faucet every time you brush your teeth.

KS

Kendra Seymour

43:17

Let me ask you a question, though. So like, if you're putting in tile, chances are they're cutting somewhere on site, though, the tile for certain things, so is there, is there safety precautions then for that that you'd recommend?

AP

Andy Pace

43:31

Yeah, I always recommend that all tiles cut outside, especially if they're using a rotary type device to cut, because it's really going to kick up a lot of dust. And it's not just the possibility of lead, but also a possibility of crystalline silica, which is, you know, essentially what causes, one of the causes of lung cancer, and so, yes, definitely cut outside. Don't have the windows open while you're doing that, because I've had to remediate too many homes with crystalline silicon in it because of stone and tile cutting from even on the outside. And then if they're going to do like a score and snap method of the tile or or clipping with a with a hand trimmer, that's typically fine. I always think it's a good idea, especially if it's a remodeling project, to use containment whenever you're working on a on a room, so that any dust that's created during the process is not traveling around the entire house. I don't think you have to be as aggressive as doing mold containment, but it doesn't hurt to have your zip ball, your plastic zip balls, up at the doorway, and even having a negative air machine, because least that way, the workers themselves, when they're going in and out of that plastic door aren't carrying it with them throughout the rest of the house. So these are just good precautions to take, no matter what the project is. But with with porcelain tile, let's say we're doing it on a floor, typically, there are some substrate materials that have to be chosen. The Tile Association says that three quarter inch tongue grip plywood is a perfectly acceptable substrate for tile. Most of the tile installers now want to at least use a layer of cement board on top of that. My preference is to not use cement board, because cement board is actually a wick that draws moisture if your grout ever cracks, water can actually wick right through the cement board, right into your wood sub floor, and 10 years from now, you're dealing with an absolutely enormous mold problem that you didn't think you'd ever have. So what I like to do is underneath the porcelain tile is put a layer of a what's called Schluter Ditra. Which is a under tile or decoupling membrane. It's actually a high density polyethylene dimple board material. It keeps cracks from occurring. But in my case, what I love using it for is keeping that moisture, that water that might get through a grout crack, and it won't hit the subfloor.

KS

Kendra Seymour

45:54

So if someone were doing this like I'm, thinking about people who want to finish their basements, who've made that conscious choice to do that, and they want something that's not stained or sealed concrete, which we'll get to in a minute. Could tile be a better option for something like a basement?

AP

Andy Pace

46:11

Yeah, tiles are great option for a basement. There's a couple of ways to do it in a basement. One is, if you don't care about cracks, and you know, you have to remember, with a concrete slab. The question is, you know, what if the concrete slab cracks? The real question is, when will it crack? Because it will crack

eventually, if you use a decoupling membrane like that Ditra underneath the tile, when the concrete cracks, that concrete, that crack won't travel up and go into the expensive tile. The downside is that Ditra becomes a complete vapor barrier. So once again, if you're dealing with moisture in the underside of the slab, that moisture may just sit underneath that slab. So you have to be a little more cognizant of making sure you have really good groundwater capture. And and removal for the use of of trench drains and, you know, sub pumps and whatnot, yeah. And so there's nothing, there's no part of tile that is a food source for mold. The thinset mortar is essentially just a thin cement. You don't want to use any acrylic add mixtures, just the pure thinset mixed with water so there's no food source in this. But again, if you have this decoupling membrane underneath the tile to prevent cracks, moisture can kind of sit on the underside of that. And if the concrete itself had already been a bit compromised with maybe past adhesives, or was already compromised and starting to crumble a little bit, you could be leading to more problems down the road. So it's just a matter of making sure that a good, proper inspection is done and we're utilizing the correct procedure for the for the material installation. But generally speaking, the use of tile in a basement is perfectly acceptable and a very good way to go.

KS

Kendra Seymour

48:09

Yeah, yeah. And, I mean, and you bring up a point about moisture, I mean, it's a consideration pretty much for just about any flooring, other than leaving it as like a sealed or stained concrete. So let's, let's end our flooring episode on that. Because I know people think, well, my home is going to look like IKEA, but if you go on Pinterest, I've seen some really lovely homes that had that as an option. So what talk to us about, you briefly talked about it before, but are there brands or stains or things we need to consider in terms of a health perspective and just overall pros and cons of that kind of finish.

AP

Andy Pace

48:47

Sure. So I'll talk about three things, a polished floor, a sealed floor, and then a stained and sealed floor, three different procedures. A polished floor, there's a company out there called Ashford. Ashford Formula is their product. And a polished floor is essentially doing a lot of grinding of your your concrete slab. So it's, it's diamond grinding the slab. You're actually soaking the slab with the this product. It's a what's called a sodium silicate, or water glass. Penetrates into the concrete actually turned creates, like a crystalline structure within the micro pores of concrete. And when you diamond grind it, it starts to polish. It usually is like a seven to nine step process. It's very labor intensive, extremely expensive to do. You're probably looking at in the 15 to \$20 per square foot price range for the average home. However, down the road, you have almost zero maintenance costs, and it's it'll last as long as the house. A sealed floor is essentially either one quick grind or an acid etching to get rid of the cream of the concrete, wash the floor, let it dry, and then you put on three or four coats of an acrylic sealer, like the AFM MexeSeal. It'll look really good for

about four or five years, and that's gonna require maintenance, additional coatings, maybe at some point you might have to do a strip and seal. And so it is more labor intensive down the road, but initial cost wise, you're probably looking at less than three bucks a square foot. Then there's what's called a stained and sealed concrete floor. This is where, if you go into a Starbucks or a big box store that has kind of like that, that leather colored floor, you can tell it's concrete, but you wonder how they got that modeled effect. This is actually using a process called acid staining the floor. There's a brand we work with called Kemiko. Kemiko acid stain is a combination of of a very mild acid that reacts with concrete and then mineral salts, and as the concrete it becomes reactive those mineral salts actually penetrate into the surface, and it chemically changes the color of concrete permanently. Once that chemical process is done and you just rinse with pure water, it's completely inert. You never have to worry about chemical off gassing in the future, the way you would with a coating, a topical coating, or what's called a topical stain, which I can get to in a second. These acid stains are a little more aggressive during the application, because it's it's actually chemically changing the color of of the concrete. But all in all, down the road, it's going to look great for decades, and then you could put either a water repellent sealer on that's breathable, or more of an acrylic seal, like the MexeSeal, which is more durable. So you've got options there. A topical stain is essentially a blend of like soy oils and acrylics that goes onto the concrete and creates a thin coating that can eventually peel if you have moisture coming up through it. And so that's usually more of a short term fix, maybe, you know, three to five years, kind of like the idea of doing a topical sealer. The downside is that once the stain starts to peel. You really have to strip the entire floor to fix it. And so if you're going to do color on a concrete floor, do the acid stain, without a doubt. Or if you can get to the concrete contractor before the slavis poured, you can even do what's called integral pigments, where they actually add pigment into the wet cement and pour it to be that the color of your choice that is definitely permanent.

KS

Kendra Seymour

52:46

Yeah, yeah. Well, that and yeah, so glad you bring up so many things to consider, because it's not just health, it's not just cost, it's durability, duration. How long are you going to be in the home? Like, what? What are all of these things kind of factor in that's awesome. Thank you, Andy, so much for your insight. Is there anything else on flooring, you know, to kind of round us out that you want to mention that you didn't get to say.

AP

Andy Pace

53:11

Boy, I think I'll just reiterate one of the things I talked about earlier, which is, understand that every flooring material that you could choose will have a set of pros and a set of cons. And so what I like to do is, again, when a client comes to me, I'll ask them, what would you like to see in your home? Not don't if you say I want to see wood, or I want to see a wood look, or maybe they'll just say, you know what, I don't

really care what it looks like, I want it to be the best bang for the buck, the longest lasting, most durable material, because we're on a really, really tight budget. All these factors are really good reasons why somebody would want to buy a certain type of flooring. Don't pigeonhole yourself into thinking that because it's wood, because it's natural, that's the way I want to go, or, you know, I have to do LVP because that's what everybody wants these days. You know what? It's your house. You do what you want, but whatever makes sense for you.

KS

Kendra Seymour

54:06

Yeah, I love that. If people had follow up questions, how could they get into contact with you? What's the best way?

AP

Andy Pace

54:11

Yeah, best way to go is to you can either go to thegreendesigncenter.com which is my online resource. I also have N, T, E, non toxic environments, so ntelive.com and that's where you get to hear all my podcasts and watch my YouTube videos.

KS

Kendra Seymour

54:29

I love that, and there's so much information Andy that you share for free for people that I think it's just wonderful, and I'll link to both those in the show notes. Thank you so much for being here.

AP

Andy Pace

54:37

Oh, thank you, Kendra. It's my pleasure.

KS

Kendra Seymour

54:37

And for everyone listening, I hope you come back for part three, because that's when we're going to get into going to get into cabinetry and some of these other building materials. And so if you don't want to miss that episode, do me a favor, head on over to ChangeTheAirFoundation.org, and sign up for our newsletter, because that really is the best way to get great information like this directly to your inbox. You can also hit that like and follow button if you're watching on Facebook or YouTube or listening on our podcast. So everyone, thank you so much. We'll see you next time.

