

A sunburst graphic with numerous thin, light gray lines radiating from a central point behind the text.

Healthy Moms Podcast

BY **Wellness Mama**[®]
simple answers for healthier families

Episode 175: When Natural Doesn't Mean Safe-
Creating Non-Toxic Homes With Green Design
Center

Child: Welcome to my Mommy's podcast.

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Katie: Hello and welcome to the "Healthy Moms Podcast." I'm Katie from wellnessmama.com and this episode is going to be all about natural homes and how to choose the right materials and supplies if you ever model, update, build, or do anything with your home. Because I am here with Andrew Pace, who's the founder of Green Design Center and he is a well-known building materials expert. He's a board member of the Institute for Building Ecology, host of the "Non-Toxic Environments" podcast and well renown expert on healthy homes. He served on the Green Building Council, been a materials consultant for numerous lead, NAHB, Healthy Child Healthy World, and Green Built Homes projects.

And in 2008, he launched Degree of Green, which is a green building product rating system that's being used by retailers and manufacturers to educate consumers and eliminate confusion because there's so much green washing that goes on in this industry. He's currently developing protocols for their FRAT method, the Formaldehyde Release Attenuation Test which will allow IAQ professionals to pinpoint the exact surfaces in a home that are releasing dangerous levels of formaldehyde. Needless to say, he's definitely an expert and I'm so excited to chat. Welcome, Andrew, and thanks for being here.

Andy: Hi, Katie. It's a pleasure and honor to be in your program. Thank you.

Katie: Oh, thank you for your time in being here. And I'd love to hear a little bit about you first because I researched your bio and you started way back in 1992 before most people even had natural green anything on their radar. So I'm really curious, what's your story and what drove you to get into this field and to start your company?

Andy: Sure. So back in, I started working in the commercial construction architectural world back in the late

'80s. And my family has owned a material supply company that dates back to the '30s here in Wisconsin. And after school, I started working for the family business and one of my first big jobs was to build up this product line that we had that was all water-based, supposedly safe coatings and caulking materials, and so forth. We are doing a job in Milwaukee where we were supplying the coating system for this below grade parking structure and above it were 15 or 16 storeys of condominiums. And after our crew got done installing the primer coat, just the very first coat, we started getting phone calls from the homeowners living above complaining of odors, the chemical fumes.

And we received not only a phone call from one of the tenants who happen to be a United State Senator, which I kind of, you know, shocked us a bit. But we also had three of our workers rushed to the hospital because of inhalation complications. They couldn't breathe because the chemicals found in these water-based supposedly safe coatings are actually causing breathing complications. And at that point, we shut the job down and kind of went on a search not only across the country to find healthier products but kind of a soul-searching mission. Like what are we doing by poisoning our customers, poisoning our own contractors and employees just to sell these products?

And it sort of dawned to me that if we can actually find healthier, safer, less toxic building materials that the entire world would be a healthier, safer place, and that was really the start of it. In 1992, 1993, the word green was still just a color. Not the way it is now, which is just not only a movement but a way of life. And so we started before the U.S. Green Building Council started their lead program. We started before anybody else really thought of it. A matter of fact, when we first started selling products, it wasn't about selling green materials, it was about selling common sets healthy building materials and that's how we launched. And to this day, 26 years later that's all we do.

Katie: That's awesome, but so scary that like your company, your workers had that big of a reaction that quickly, and how really, we should all probably be much more aware of the things that we're putting in our homes. So you mentioned the system called Degree of Green, can you kind of explain more in depth what that is and what it really measures?

Andy: Yes. So there are dozens of, what I call, Green Building rating systems and certification programs that are used by manufacturers all throughout the world. So we're familiar with systems like Green Guard or Green Seal, and these certifications basically will tell a manufacturer and thus a consumer that these products are stamped, approved to be used on a lead project. It's not...those systems are not designed to do anything more than just tell you, you can use it on a certified green building project and you don't have to go through the additional paperwork. What the Degree of Green program is it's all based upon consumers and it's all based upon information, whether it's actual, you know, scientific and factual information as well as anecdotal information.

Homeowners don't care whether this product is meeting the GS-11 standard for paints and coatings because they don't even know what that is. Homeowners care, "Is this paint gonna poison my kids?" You know, "When my dog lays on this carpet, is there a possibility that the dog is gonna develop cancer which is happening at an exponential rate right now? So we put together a degree of, what we call, degree of green to show that there are 27 different reasons why you can call a building product or a consumer good green. But most manufacturers don't describe why they call it green. They just give it a stamp and they say it's green or eco-friendly and they leave it at that.

We actually drill down to those 27 reasons and we give it a score for three categories, human health, environment health, and overall sustainability. Because some customers, they don't care if a product contains recycled content or is recyclable. To them, the most important aspect is, is this product toxic or safe? Now, on the flip side of the coin, some customers really do value what the overall carbon footprint of a product is or is it recyclable once it's passed its useful life? And so what we wanted to do is give consumers information about these products, all the information laid out there and you can decide for yourself what does green mean for you and how these products can fit into your project.

Katie: I love that you brought up that you look at both the human aspect, the sustainability, and the environmental side because that's one thing I've noticed in my own research when we remodeled or looking at building a house in the future, there's a lot of things that claim to be eco-friendly or probably are but they're not human safe, or there's a lot of things that are not toxic but they have a horrible effect on the environment and vice versa. So, I love that that's an...you're really rating both so people can find things that are both. I think that's so important and I do a lot of education on my side about the things we bring into our home, the cleaners, the beauty products, the things that we're exposed to everyday.

But I think a lot of people maybe assume that the house itself maybe at least if it's a few years old has off-gas and it's safe, and not something really to worry about. So I'd love to hear your take on that as the whole green and natural movement has gotten more mainstream. Why do you think it's still critical for all of us to make these changes to our homes as well?

Andy: Well, I'll take that last part first because I think it kinda sums it all up. The fact of the matter is that there's about 88,000 chemicals that are used in the production of building products and home goods today. Out of those 88,000 chemicals only about 3% have ever been tested by a governmental agency to determine whether or not they're actually toxic to humans or not. So out of the 80 some thousand chemicals that are left we have absolutely no idea what they do to the human body. We don't know once these chemicals start to combine in the air they create this toxic soup inside of the home. What's now happening after the fact? And so we decided years ago that our focus is going to be human health concerns first.

I mean, I happen to use a phrase all the time and for those who know me, they've heard this probably too many times. But I always say, "What good is saving the environment if we're still poisoning all of its occupants?" And so manufacturers are coming out with "green materials" to meet the EPA regulations for outer air pollution, but they don't actually tell you that. They say these products are zero VOC and air safe and air friendly. But if you actually drill down to the details, you'll find that the VOC regulations have nothing to do with human health. They have everything to do with outer air pollution and smog. So, what we try to do and we have accomplished is create this, kind of a curated group of over 6,000 products that you can use inside of your home to actually build or remodel a home in a healthier way.

And it's not as if we say we don't care about the outdoor environment because that's completely false. We do care about it. But we wanna actually care for the human occupants first because, to us, human friendly is the ultimate environmentally friendly. And if you do everything in your power to make products that are healthier for the outdoor environment, you still will poison the occupants because there are so many chemicals that are used that are not actually classified as being regulated, therefore, manufacturers can use them and not tell you.

Katie: Wow, that's, yeah, really astounding but that still is the case. Like even with all these knowledge about,

you know, more natural living and the Green Building Movement, it's amazing that that's still the standard. I'd love to go deeper on what's some of the biggest offenders are in most homes and how they can be fixed or mitigated. I'm guessing based on your bio that formaldehyde is an offender because you got a test for that. I know VOC is a word that gets thrown out there a lot. But what are some of the biggest offenders that actually most people are gonna encounter in their own home?

Andy: So I believe the three biggest offenders you find in a home are VOCs, formaldehyde, and mold. And this is from a product standpoint, of course. I mean, we can certainly go into electromagnetic fields, which is probably a discussion for another day because that's quite a deep topic. But the biggest that we find would be your volatile organic compounds, which I agree. Some of them are very, very dangerous to humans and we want to avoid them as much as possible. The problem is, is that the EPA paints all VOCs with the same brush. And if it's, for instance, in paints and coatings years ago, manufacturers would use ethylene glycol, and ethylene glycol is actually anti-freeze for your car, highly toxic to humans and pets, and plants.

But they use it in paint because it helps to keep the paint from drying out in the can. It acts as a method to keep what's called a wet edge, so you don't get lap lines while you're painting. Well, we work with a paint company called AFM Safecoat and Safecoat used propylene glycol, which is kind of a close cousin chemically speaking at least in the name, but the chemistry is complete different. It's completely harmless to humans, especially in the method it was being used. I mean, nobody would drink paint, of course, but when you put on your wall it wouldn't release anything that would actually be absorbed by the human body. So that was completely toxin free while the EPA says, "Well, they're both glycols, therefore, they're both VOCs, you can't use either of them," which doesn't make a lot of sense.

You know, so they had to reformulate their product using no glycols whatsoever and while Safecoat uses just a higher resin content and more water, most manufacturers who make a zero VOC paint actually use a combination of what are called unregulated VOCs which will be ammonia, acetone, and butyl acetate. So that's why I say VOCs is still a very dangerous thing in the home, but you got to be aware of the toxicity of the ingredient, not necessarily whether it's a VOC or not. I mean, if you peel the skin off of an orange, you're releasing 850 grams per liter of VOCs. It doesn't mean it's dangerous, you know, it just means that it could evaporate and rise to the upper atmosphere. So VOC is number one, number two and I think is probably the most important, I should have put them in different order, is formaldehyde.

Formaldehyde is used in so many building products, so many consumer goods that we wouldn't even recognize but it's there. And formaldehyde, not only for people with chemical sensitivity but for those who suffer from asthma, it's a key trigger. And if we can eliminate formaldehyde in the house from all the sources that it comes from, we're probably solving about three quarters of the problem with the chemical environment inside of most homes. And then the third would be mold, and mold is one of those things where even though it's a natural problem it creates toxins that are very similar to VOCs and it can affect people with chemical sensitivities, allergies, and asthma the same way. So those are the three products that we really try or three issues we try to deal with. We know that if we can deal with those three we're pretty much solving probably 90% of the problems inside of a home.

Katie: Yeah, that's a good rule of thumb. So within those three categories, let's go deeper on formaldehyde, because you said that's one of the really one that you'd focus on a lot. What are some of the most common sources in an average home that someone really needs to be aware of or is there a test for that? What would you recommend?

Andy: Sure. So formaldehyde can be found in some of the most obscure things inside of the home and you wouldn't even realize it. So you mentioned before that we do a testing system called FRAT, the Formaldehyde Release Attenuation Test. And what this does is this actually pinpoints the exact surfaces inside of the home that's releasing formaldehyde and it tests down to one part per billion, so at minuscule levels. But at that small level people can still have a reaction, especially those that have depressed immune systems. So, just to give an example, the lead level, if you are building a lead platinum project, in the ambient air, they want you to have no greater than 17 parts per billion of formaldehyde in the air.

Well, inside the average home, if you have carpet that could be between 400 and 600 parts per billion just by the carpet itself. If you have one room in the house that has a wallpaper border around the periphery of the room, the adhesive that you use for that border can contain up to 4,000 parts per billion of formaldehyde. And I've even tested wood glues that are marketed as being non-toxic water base that will release during the cure and after the cure over 2,000 parts per billion of formaldehyde. And most people ask, how does that happen? I mean, it doesn't list formaldehyde on the list of ingredients. And that's true. And so it's been determined that manufacturers use, what are called, formaldehyde donors or formaldehyde precursors.

These are chemicals that in a liquid state they're really undetectable. And in a liquid state, each ingredient makes up less than 1% of the volume so it doesn't have to be listed on the MSDS. But when you put it on the surface and it starts to cure, it actually creates formaldehyde during the curing process. So it gets around the regulations, it gets around all the MSDS and any green certification because they don't test it in use. And then once it's in your home, it releases potentially toxic levels of formaldehyde. And so our FRAT test is a method to find out, to pinpoint what is the exact surface that's releasing formaldehyde. And once we find that exact surface, we can remediate that exact surface instead of gutting the home to try to find the problem.

It might only be, you know, \$400 worth of wallpaper board that needs to be removed or coated over. We've had some situations before where people thought that they had thousands of square feet of engineered floor that they have to rip out because they thought it was the flooring causing the formaldehyde. It turns out to be a couple of area rugs or something else completely unrelated that's causing the problem. So this is really not only a life-saving situation but a huge savings in the wallet.

Katie: Yeah, that is huge to not have to guess. So you mentioned carpet and wallpaper being some big offenders, are there safe versions of those? Like are there any carpets that would be okay that would pass the test? Are there any wallpapers that would pass the test?

Andy: Wallpapers, there are some that will pass the test. There's a lot of natural wallpapers that aren't treated with any chemical dyes, they just use vegetable dyes. And they're made of either sea grass or pounded bark, which is absolutely gorgeous, and then we use just non-toxic adhesives to attach them. Carpet, yes, there's a couple of products available that are completely natural. Now, the flip side is that they are made of wool and some people do have wool allergies. It kind of speaks to the entire issue that you set it up with at the beginning of the show which is natural building or green building. And when we're advocating for healthy homes, we always have to remember that just because something is natural doesn't mean it's actually safe.

So our customers, most of our customers worldwide are people with extreme chemical sensitivities and that means that even a natural product, whether it's an essential oil or whether it's wool that contains lanolin, could actually trigger an allergic reaction so we've got to be very mindful of that. So, there's a few rules that

we use. Just because that's natural doesn't mean it's safe, you know, it's one of the biggest rules. And just because something is synthetic or "petroleum-based" does not mean it's dangerous. You know, we find the products that are tolerable by those with the most extreme sensitivities and that's what we promote. So, long story longer, yes, there are some safe carpet companies out there, but you have to make sure that you don't have any allergies or reactions to those natural ingredients.

Katie: That makes so much sense. Actually, in high school I was an assistant for someone who was chemically sensitive, that was one of my summer jobs. I would run errands for her and just help her around the house because she really couldn't leave her house because she was that severely chemically sensitive and it really struck me, exactly what you've said. Even things that were natural like type products, she had to be careful with, like being around too much vinegar actually could trigger her or essential oils could trigger her. Certainly, anything like shampoos, any of that, and it was really interesting to see that, and that stuck with me. And as I've learned more and more about natural living I've always kind of kept that and realizing I think that's such an important point you made as well that everything that's not natural is necessarily unsafe.

We ended up going with the mattress, for instance, that doesn't have any harmful ingredients, but it has some inert, non-natural ingredients because it makes it firmer and it's more comfortable, and it holds up better. So I think that's gonna be such an important balance as we start to like understand more about this building and green building, and green homes because I feel like, even though you've been doing this for 25 years, for many of us this is still in its infancy and we're still learning. I love that you're going deep on this. Okay. So, you also mentioned mold and that's a scary word for a lot of people. If they found out they have mold, it's...I know some people have had to like leave their homes and it's a very serious problem. Are there tests for that and can it ever be remediated? That's a question I've always wondered, if mold exist, can it go away?

Andy: So there are test for mold and there are test for mold and there are tests for mold. So, what I mean by that is you can go to most hardware stores and buy a kit, that's a little testing strips to tell you that there are spores in the air. Or you can hire somebody who's an actual professional and they will set up collection points. And drill down to what the actual active spores are and whether they're harmful or not. The thing about mold is that mold is in the air all the time. Mold is part of the air we breathe, it's everywhere. So, some people can have allergies or other sensitivities triggered by mold, but it comes down to whether or not it is at a dangerous level or not.

And so will you ever have a home without mold? No, because mold spores will be brought into the home on your clothes just from walking outside. But if you have a problem with mold where the spore count is very high, and you know, you've got an active colony somewhere, yes, that can be very dangerous. I do recommend that for families that find this problem that you move out of the house while they remediate because they can do the best job they can to close off all the ventilation ducts, to mask off the areas so that the spores don't travel. But first-hand experience is that that's how I started my company years ago because we thought we did all the right thing to mask everything off but those chemicals still traveled.

So, I would always stress that if it's an active situation in the home, to move out, whether it's for a couple of days or a week, have it remediated. And there are safe things that you can use to remediate mold. Now, it depends on how much damage has been done because of it but if it's simply superficial and not structural, there are some toxin-free ways for professional companies to get rid of it and keep it from coming back using predominantly natural ingredients. And so that's a product that we really started digging into deeply about a year ago and we're just thrilled with it.

Katie: That's really good to know. I live in a really humid climate now so that's something that's definitely on my radar and I hope I never have to deal with that. But if I do, I'll be calling you to consult for sure. Okay. So, also you talked about VOCs and that one I feel like most people are familiar with. There's now these like low VOC paints out there, although, I'm a research nerd and from what I've researched there's potentially other problems, even with low or no VOC paints, including something called SVOCs. I don't know if I'm reading that correctly or understanding it, but I'd love to hear more about that. And I feel like painting is a pretty common home thing, even if you're not gonna do a remodeling or build from scratch. People tend to paint pretty often, so let's talk about safe paint options and what to look for.

Andy: Sure, of course. So painting is so popular because it's a very inexpensive way, a relatively inexpensive way to give the home a fresh look. And now, homeowners don't like to paint, I don't like to paint. You know, I've been selling paint for 30 years. I'm not a big fan of doing it myself because there's a lot involved in the preparation, you know, drop cloths and using masking tape to make sure you don't get it on areas you don't want it to have it on. And so you wanna do it once and maybe not do it again for another 20 years. So, when it comes to buying paints, you wanna buy it make sure, I always tell customers, "Buy the most expensive paint that you can afford." Don't buy inexpensive because in the paint industry, you definitely get, aside from a few items that sort of stick out, you get what you pay for.

The higher the price per gallon, the better the quality. And so if you don't want to paint every five or six years, buy what's called a premium quality residential paint and you won't have to touch it for 20 years. I mean, you'll get sick of the color before it ever wears off or starts to dust your chalk off the wall. Regarding the VOC idea itself, VOCs for those who don't know the exact definition, it's a volatile organic compound. It's a carbon-based molecule that's readily vaporized at room temperature that could evaporate off the surface, travel to the upper atmosphere, react with nitrogen and UV to create smog. That's the exact EPA definition of it. Nowhere in that definition that does say anything about human health.

It's 100% regulated because of outdoor air pollution and smog. Inside of a home, that's irrelevant because they don't have a high level of nitrogen and we don't have a high level of UV. It is true that some VOCs are very dangerous for humans but it's also true that many of the ingredients found in low and zero VOC paints are not VOCs, they never have been VOCs, and they're still very, very toxic to humans. So what to look for when you're buying paint? Don't just look for the VOC content, that's irrelevant. Look for whether the product is toxin free, whether it's doctor recommended or not. I mean these are the two big things and what I go for is that anecdotal. I've got 15,000 customers nationwide who have severe chemical sensitivity and 95% of them tell me, you know, the Safecoat brand that we supply is the one that they can tolerate the best.

Now, there will be people who can't tolerate it, there will be people who can tolerate other brands and not Safecoat because chemical sensitivities are very, very special type of disease. Not everybody has the exact same problem that you all know that, I mean with chemical sensitivity you react to chemical out gassing but not everybody reacts to the same chemicals, so it's very difficult to pinpoint. But for when it comes to recommending the safest, that's why we stick with the Safecoat product because we know historically speaking, it is the most recognized and go-to brand for people with chemical sensitivity. Other brands are going to be perfectly great products. I mean, durability wise, longevity, colors, all of that, fantastic. But they don't actually sell healthier products, they sell eco-friendly, and the eco-friendly products can still contain ammonia, acetone, I mean that's nail polish remover, highly toxic but it's not classified as a VOC.

Katie: That's good to know. And as you're talking about that, it makes me think of the BPA thing with plastic that we like latch on to BPA being a harmful substance and so everybody's looking for BPA-free. But others maybe have always been BPA-free but have BPS or BPF, or something potentially as equally harmful or more so, and you illustrated that so well with paints. So, basically for someone who doesn't have a chemical sensitivity, the Safecoat brand will be fine for a normal household.

Andy: Of course. I do believe that, you know, we supply all of our products to be safe enough for those with extreme chemical sensitivities but better for everyone. You know, the fact is that if there's so many chemicals that are found in the average home. It's been estimated that the average new home construction there's between 10,000 and 15,000 chemicals in the air just from the building process itself. So, if we can reduce that chemical load, it's better. You know, a painted surface is probably 70% of all the surfaces that you're gonna touch inside of your home. And if we can cut the chemicals coming off from all those painted surfaces down to zero, that makes an enormous difference and that's gonna help anybody.

Katie: Absolutely. And am I understanding correctly, so for instance, if you have a harmful paint but, say, it's water-based and you can paint over it, if you repaint, is that sealing in the harmful aspects of that original coat in making it safe? Or do you need to like strip it and redo?

Andy: Most often, probably 95% of the situations we get involved in where they have an existing paint that's off-gassing and just on that, most water-based paints and coatings, once they fully cure and the curing process is usually about up to two weeks. Most water-based coatings including zero VOC coatings can off-gas for up to four and a half years after they reach a full cure. So if in this call comes in on a very regular basis, somebody painted their home with XYZ brand of paint six months ago, they still can't move in to their house. And then we send them enough material to put two coats of the Safecoat on, completely seals it up and they can move in next week. And so yes, this will take care of that problem.

Katie: Great to know. So for anyone who just is remodeling their own home or moving into a new home, that's a great solution. That seems pretty cost effective comparatively.

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collagen-rich broth that is great for hair, skin, and nails. My favorite part is that it only takes a minute to heat up any of these broths or soups on the stove and I can keep a case in my pantry so it's there any time I need it. Right now, you can save 10% by going to kettleandfire.com/mama and the discount is already built in. So just remember that link - kettleandfire.com/mama

Katie: Okay. So you've also, I'd love to talk about flooring a little bit. I feel like, partially, this is a selfish question because I'm about to take on a remodeling project, but also that's one that tends to get replaced relatively often in homes I feel like in, whether it be kitchen flooring or bathroom flooring. And I've been personally researching a few options I'd love to get your take on. I love the look of natural cork and I'm curious if that's a pretty safe option. Also, things like porcelain tile, like old world porcelain from Italy, I'm curious if those are safe just selfishly or if there's others as well.

Andy: Sure. Cork. I've been selling cork flooring for close to probably over 20 years now. And I can say that the cork itself is generally safe. Now, cork is nothing more than the bark of the cork oak tree and most of it comes from Spain, Portugal, and parts of Italy. Cork has a distinctive smell to it and this is where it's kind of tricky for people with chemical sensitivity because, again, just because it's natural doesn't mean it's safe. Cork naturally contains an ingredient called suberin. It's actually like the sap in cork. And that's the ingredient, the natural ingredient in cork that not only gives it its smell but that makes it anti-static and antibacterial by nature. So it's a really helpful ingredient but the problem is that if you have sensitivities, that smell never goes away.

And no matter how you try to seal it or somehow remediate it, that smell will never go away. So if you have sensitivities I'd be careful with that. The other thing is that most cork that's used in homes today is a, what's called, a floating floor system, so it's cork laminated to a core of MDF or Medium Density Fiberboard. And there's an adhesive used in between those two plies plus the fiber board may contain formaldehyde. And formaldehyde that's found in fiber board and plywood, and OSB can off-gas for literally dozens of years. So, it's just the matter of finding the brands that are safe and have had use in chemical sensitive folks' homes, so we know that it's been tested and it's gonna work for them.

Porcelain, all the tiles pretty much made the same and no matter what ingredient that goes into it in a liquid state, it gets fired at about 2,500 degrees so anything that's in there will be burned off. The one downside to porcelain tile is that all porcelain is glazed. They'll put a clear glaze over the top to seal it, so it doesn't absorb water or to give it a shine or what have you. Those glazed compounds sometimes can contain lead, and it depends on where it's made. And so a lot of times the Chinese-made materials will have lead and they won't disclose it. Even some of the Italian tiles can contain lead so I'll recommend that you get a sample of the tile from the tile store and also buy an inexpensive lead swab test kit from the hardware store and just make sure it's gonna be safe because you never know with that product.

Beyond that, all tile is pretty much the same, it's fairly inert. There are some brands that use a high grade of titanium dioxide in the glaze and what that does is it makes the tile an active antibacterial surface. And it's completely harmless to humans but it actually actively helps to clean the air. So, I would look for that because that's like the healthy version of a very eco-friendly product.

Katie: That's fascinating. I'll definitely be on the lookout for that. And I'm so glad you brought up MDF in plywood because I think maybe that's one people don't often think about and from what I've been researching and just in my own home, it's so prevalent. From what I've read, it can be used in cabinets and furniture, and

pretty much so many uses in the home. So how, on the spectrum, how bad is that and how long does that take to off-gas? It seems, like you mentioned, it could take a really long time.

Andy: It can. And here's a thing about MDF and other engineered or man-made woods. There is what's called NAUF materials, that stands for "No Added Urea Formaldehyde." Urea formaldehyde is the version of formaldehyde that's most likely to cause a reaction. Well, there's another version of formaldehyde called phenol formaldehyde. And so most often when manufacturers of plywood or OSB say, "Our product is formaldehyde-free." They're actually referring to being urea formaldehyde-free, and that means they use the other version called phenol. Phenols are about 100 times less likely to become airborne, but if you have sensitivities, you still can react. Whichever one they use, I've seen wood, these man-made woods that's over 30 years old that still test positively for having formaldehyde off-gassing.

So, it really will off-gas for the lifespan of the product line. And it's hard to say, here's a great example. If you have plywood underneath a carpeted floor in your home, the carpet sort of acts as a barrier. It's not 100% vapor barrier, but it's enough of a barrier that it slows down the rate of evaporation or the rate of release of formaldehyde. When you decide to take the carpet out because, you know, 99% of carpet is highly toxic and can be for 25 years, and put in a really good hardwood floor or porcelain tile, or a cork floor, you're exposing that surface again and so more formaldehyde will come out while it's exposed.

And so there are sealers on the market, there's a product called Safe Seal, that if you use two coats of Safe Seal on the surface, it will seal up the formaldehyde gas in between 98% and 100%. So there are ways to remediate it, and that holds true with a lot of the products that we supply. The most effective way to completely remove all the toxins is to remove the source of the pollutant. If you can't remove the source of the pollutant, you can seal it. Sealing it is not as effective but far more cost effective.

Katie: Got it. And for anyone who is listening and driving and wanting to make a note of all these products, I'm gonna make a note in the show notes of all of the ones you've mentioned and also a link to your website because you have more info about all of these on your website. Also, for anyone listening, I should have mentioned this at the beginning, but Andy does consults. So if you are building or remodeling, or have chemical sensitivities, you can actually talk to his team. I'll put that info in the show notes as well. So, okay. So we've mentioned that furniture can have MDF and formaldehyde, and all these issues, is there any kind of good rule of thumb for finding decent furniture that doesn't involve as making our own with just like natural lumber and cloth. Do you have any guidelines there?

Andy: I kind of chuckled because I have some customers who get so frustrated with the shopping experience, especially for furniture, that they...that's what they say. I'm just gonna make my own. Rule of thumb. I would say that solid wood furniture will always be better than engineered or man-made manufactured wood furniture. Look for furniture that if it is upholstered, that the upholstery or the fabric is organic, and hopefully free of any flame retardants. Now I know in California, especially, they have, you know, they've been eliminating flame retardants but they're actually eliminating just some of the most well-known ones and they're allowing manufacturers then to use other unknown flame retardants. So look for organic fabrics that are not true to flame retardants or with any pesticides. And hopefully, if you are looking for, let's say, a sofa or a loveseat that you can find a manufacturer that uses natural latex for the cushions as opposed to synthetic. That will be also a lot safer.

Katie: Cool. I'll make notes of those as well. Okay. So we've covered most of, I think, the big offenders in a

home. I'd love to now go broad scope and just kind of get your ideas if you are going to build a home from scratch, like from the ground up, what would be, where would you start, where would you have someone start? And what materials would you go through even as far as like inside the walls, the external surfaces of the house, etc.?

Andy: Obviously, a very large subject but let me give you, I guess, my perfect scenario. My perfect scenario would be to find a piece of property that...it doesn't matter to me whether it's in a subdivision or, you know, being sold off as land from a farmer but make sure it's land that hasn't been farmed in a long time. You know, you can have pesticides that are retained in the soil for anywhere from 30 to 50 years. And there are barriers that you can use in the foundation to keep that from migrating in. After that, my favorite form of construction honestly is a product called ICF or insulated concrete form. Insulated concrete form is basically what it says. And instead of using the concrete form that gets removed and then you're just left with the concrete wall, it's a form that stays in place.

And that form can be made from expanded polystyrene which I know sounds horrible but it's actually inert. Or it can be made, there are other versions made from hemp and concrete together. Whatever the case is, what I'm trying to do is create a wall, an exterior shell of this home that is almost completely wood-free. And the reason why it's wood-free is because we don't want any possibility of mold. And where there's wood is a food source. So we get rid of the food source of mold and whatever you use on the outside of the home, try to use some that's not gonna off-gas and come to the windows. Inside of the space, I would be using, I guess, my own home is a great example of this. I mean, my own home is...it's kinda nice being an owner of a building material supply company.

I got thousands of materials at my disposal, but I always try to use what I sell first before I put it on the showroom floor. So my home is kind of a test market. I've got cork flooring, natural linoleum, which I think is the best flooring material for kitchen and bath. I've got bamboo in some areas, which I know is completely formaldehyde-free. I just installed in my lower level a vinyl plank flooring. And for those who are really into natural and green building, when I just said vinyl plank flooring, they probably all just cringed and thought that I just lost all credibility. I am serious when I tell you that it doesn't have to be completely natural to be completely safe. In this particular brand that I work with now after I've used it, I can tell you it's tested zero with our FRAT testing.

And formaldehyde off-gassing is a big problem with vinyl, it's called luxury vinyl plank flooring and so I tested it to be zero, put it into my own home. There's virtually no smell to it whatsoever and it carries, you know, lengthy warranties and it's extremely attractive. So my home is this schmorgas-board of product but it's all materials that I would recommend for anybody's home, anybody who wants to live in a healthy home.

Katie: Got it. I was just taking notes to include all of that in the show notes. Also, okay, so I'm curious to get your take on second-hand, for instance, furniture or moving into a house that's older versus newer. So you've mentioned that some of these things can take a very, very long time to off-gas but is there kind of like a curve there? Like are they better after X amount of time? The reason I ask is I've recommended, for instance, people can use second-hand natural-fibered clothing that's already been washed a lot of times, that's also obviously more environmentally friendly because they're reusing but it's been washed to get out a lot of the pesticides and the original things that may have been in it. Is that the same with, for instance, furniture, like wooden if that's like someone really budget conscious, is that a better option than like a newer furniture if they had to choose?

Andy: It depends on what degree of green they're trying to achieve. So if the degree of green to the client is we wanna build a home that's completely toxin-free or as little as possible, then I'm gonna tell them not to use anything that's ever been used before. And the reason for that is you don't know how it was maintained. In the building industry, right now it's really fashionable for people to use a rustic barn wood material to make a bedroom or a den look nice. And while it looks absolutely gorgeous, well, that actually came from a barn. You have no idea what was held inside of that barn for the last 150 years. You know, it could be loaded with chemical. But people use it thinking that it's eco-friendly.

Another version would be people who make furniture on the pallets. You know, pallets are not only full of pesticides themselves but if you've ever taken a pallet off of a semi-truck and you look at all the grease and the oil, and the solvents that are spread all over those semi-truck floors, you'd never want a pallet inside your home again. So you've got to be very careful about the source if you're going to be using any recycled or re-purposed materials. And the same holds true then with, I think, with clothing it's a little bit better because you can use certain types of laundry detergents, very safe materials that not only clean out what was already in there but don't leave residues themselves, so that's a different story.

But when it comes to building materials, I'm very, very skeptical of using reclaimed anything because you don't know how it was maintained and with what. For the home itself, you know, a home that is 30 years old or older you can be pretty sure that almost everything inside of that home that was going to off-gas has already off-gassed. The difficulty there would be there are issues to deal with. Now, the chemical off-gassing might be done but it may be more likely to have mold problem or maybe more likely to have lead or asbestos, or what have you. So there are trade-offs and this is why we use our degree of grain system. We actually have a test that if you sign up on our website which is degreeofgreen.com, that's our, we have two websites and we can put that in the notes.

But we actually have a test that you can take to help you determine what your own personal degree of green is. And if your degree of green is human health, you're gonna avoid reclaimed products. If your degree of green is sustainability, that's a different story. You're gonna be using anything you can possibly find that is recycled, re-purposed, or renewed because health is not your main focus. Moral of the story is there is no such thing as a perfect house, there is no such thing as a perfect product. Nothing will hit all three degrees of green 100%, it's impossible. You're gonna drive yourself, I tell this to customers all the time. You know, drive yourself to the poor house of the nut house trying to find perfection, it's not there. You have to choose wisely and choose what makes the most sense for you and your family.

Katie: It's a good rule of thumb for so many areas of life I feel like, and I'm gonna make sure that there's links to everything you already mentioned in the show notes. And I know you said it could be a whole another topic for a whole another podcast and I think we should actually do a round two one day. But I don't wanna let you off the hook without at least asking a little bit about EMFs because I'm getting this question so often. There's so much conflicting information and research out there. I personally feel like it's gonna become one of the big topics of our time. We're just kind of on the cusp of that but I'd love to just get an overview from you of what you look out when it comes to EMFs, what you think the biggest problems are and what we can do about it?

Andy: Yeah, I agree with you, Katie. I think that between formaldehyde and EMFs, that's gonna be the two issues that people will be focusing on predominantly and it's gonna be pretty soon, too, because studies are coming out about the effects of, you know, children having cellphones up to their ear constantly. Studies are

coming out with, you know, effects of people who live not only underneath but even, you know, somewhat around these high-tension power lines. It is an enormous problem and with cell towers going up on a daily basis all around us, it's very hard to avoid unless you take precautions. And so in the new home construction it's a little bit easier. You can build the home in a manner that will block a lot of these signals to come into the home.

The problem is if you block the signal to come into the home, then like a cell signal or a Wi-Fi signal, you have to then hardwire everything if you want access to the internet. You're gonna have to do it the old fashion way and put, you know, CAT5E cables in the wall and actually plug your devices in so you're not receiving any wireless, but it's the safest way to go. In a remodeling situation, it's a little more difficult because now we have to try to fix it when it's already been done. So there are different codings you can use that contain high amounts of carbon that will block the signal from coming into the home. There are meters you can use for sealing up the smart meters so that that radiation doesn't get into the home.

So, it really comes down to, you know, how severe the problem is and what you need to do to fix it. I mean, I'm a big believer and I have this in my own house that, you know, in every bedroom there's a kill switch. It's a very simple process for an electrician to install which basically turns off the power to that bedroom and makes the bedroom a true sanctuary so that, you know, we all know, don't have a TV in the bedroom because, you know, not only is it unhealthy from a fengshui perspective but it's unhealthy to have that stimulation when you're trying to fall asleep, same with the cell phone. But it's also unhealthy from a radiation standpoint. So the kill switch in the bedroom will make sure that that's a healthy sanctuary. I recommend that as a very inexpensive way to ensure, you know, quality six to eight hours of sleep every night.

Katie: I would agree with you and I'm gonna be posting soon about how we've done that in our own house, so I'll make sure to link to that as well as your information on that in the show notes. I also like...could say from my own perspective and just what I've researched some of the steps, it doesn't have to be super overwhelming especially if you're not dealing with extreme health issues, even just things like what you said, mitigating it at night, turning off the Wi-Fi at night. Even if you're gonna have Wi-Fi, just turn it off while you're asleep because you're not using it anyway. And keeping your phone on airplane mode, that alone gives you at least some break while you're asleep.

And I feel like especially for kids, the research I've seen, and you can weigh in on this, is that we're actually more susceptible to the damage of EMFs while we're sleeping because we're in a more vulnerable state where our body is regenerating and doing all the things that happen while we sleep. And so if you can reduce your exposure, then you're actually going a lot farther toward reducing your total exposure than even avoiding it during the day. Is that your experience as well?

Andy: One hundred percent accurate, Katie.

Katie: Awesome. Well, like I said at the beginning, I literally think I could talk to you all day about this kind of stuff because you are such a wealth of knowledge. I do think I will kinda try to get you in for a round two one day, and I think we'll get a lot of questions and could do a follow-up. But real quick, can you give us a rundown of where people can find you, your podcast, and I'll put all those links in the show notes as well.

Andy: Great, thank you. So my podcast is called "Non-Toxic Environments." And you can go to either iTunes or Stitcher, or Google Play and you'll find it there. The website that houses that is called degreeofgreen.com. So if

you go to degreeofgreen.com/itunes, it will take you right to the podcast and that's all about education. You know, at this point, we're not trying to sell product, we're just trying to give you the tools so you can find the products that meet your degree of green. If you find that there is a need for a product, whether it's flooring materials, finishes, air and water purification devices, anything you need to create or maintain a healthy home, our website which is called thegreendesigncenter.com, all spelled out, has about right now 3,000 to 4,000 products to help maintain that healthy home and we're adding more every single day. It's just a huge task to do it but we're happy to do that. We feel that we are the definitive resource in North America for healthy building materials. And while others are focusing on green, we really focus on the health of the human occupant.

Katie: I love that. I think the work you're doing is so important and I will make sure all the things you just mentioned are linked in the show notes at wellnessmama.fm along with info, if anyone does wanna do a consult, how they can get in touch with you through your website. And, like I said, I appreciate so much your time of being here. I know that you are a world-renowned expert on this and I appreciate you sharing your wisdom with us.

Andy: I love to do it. Thank you so much, Katie.

Katie: And thanks to all of you for listening. And I hope to see you next time on the "Healthy Moms Podcast."

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