



Your Functional Medicine Expert®
Jill Carnahan, MD ABHM, ABolM, IFMCP

[#18: Dr. Jill Interviews Jeff Bookout on Mold Inspection and Remediation](#)

Dr. Jill 0:12

All right, we are live! Hey everybody! It's so good to be back with you on Facebook Live. Thank you, guys, for joining us. Today I have a friend and a really incredible guest, and I know so many of you who follow me deal with mold, and that is our topic today. So you're in for a treat, and you're in with one of the neatest human beings that I know, Jeff Bookout. I will formally introduce him in a minute.

Dr. Jill 0:38

Just a few housekeeping things: I will be watching the feed here, so if you have questions or anything you'd like to ask, be sure to type them into the comments. I would love it if you'd share this with friends, family, and [other] people you know who are maybe dealing with a mold situation and have questions. We will be sure to post resource links for the live and recorded [versions]. So if you missed this or you catch us halfway, this is recorded. It'll be on our Facebook page, and it'll also be on my YouTube channel. So I'd love for you to subscribe there as well. The same videos are all recorded and on YouTube. One last thing: I've gotten a lot of requests for updates on upcoming Facebook Lives and things that we're doing. You can stay tuned to that by subscribing to my newsletter. It's super easy if you have your phone out. All you need to do is text a number, and you'll sign right up for that newsletter for free. It's free. We never share your information with anyone. And in order to do that, all you need to do is just type in the number 66866 and, in the subject line, just "Dr. Jill"—it doesn't matter [if it's in] lower case or upper case—and hit send. Then it'll ask for your email, and you're on the list. Then you'll get all my content, which is all free.

Dr. Jill 1:51

Jeff, it is so awesome to have you here. So far, it's just been friends and people that I love and respect that I have here because it's so fun just to have a conversation. Even today we don't have an agenda, so we're just going to wing it and talk about mold. But I really think we're going to hit on a lot of important things. I want to hear your story. And I don't have a formal written bio from you. I don't know how many years ago we met. I've been in the business of helping people physically in the office with mold, but I cannot do what I do without people like Jeff Bookout. He has come to be so loved, respected, and trusted by myself, my colleagues, and so many of my patients. What's funny is that I'm in Denver and Jeff is in Oklahoma, but he spends about half his life in Colorado.

Dr. Jill 2:35

We're so grateful out here because, as I told him before we started the call, this industry of mold remediation is kind of like used cars. And I hate to put you in that category, Jeff, because you're the opposite. But what I find is that there are a lot of unsavory and untrustworthy people who take advantage. And my patients who have this, as [I] myself [did] years ago, are suffering. They're mentally having trouble with brain fog, and it's a really difficult situation the way it is. Then to have someone take advantage of that is so hard. You are the exception to the extreme. You're a man of integrity—a man who does the right thing and who's really, really good at what he does. Just like for myself and medicine, there's the science and the knowledge base, and you have that in spades. But what you also have is an intuitive sense, and you kind of have a special [sense of] smell. And you have some of these gifts that were just God-given to do what you do and do it well. But I'd love to hear a little bit about how you got interested in this industry and your story of where you arrived and where you're at now in the mold inspection business.

Jeff Bookout 3:39

You bet. So thank you, Jill. I'm extremely humbled. You're right; it's a God-given talent. I think trials and tribulations always bring your life a reason, and we are to learn from those. I have two 18-year-old daughters right now. They're 18 and a half months apart. But my youngest daughter was getting sick from mold exposure. It was funny because it was in the house I grew up in—my parents' house down in the basement. We'd show up and stay the night. Anywhere from four hours to four days later, boom, she's hit with a 104-degree fever. By 2:00 a.m., it's strep throat. The strep throat ends up going on. This goes on 16–20 times a year. They take her tonsils out, and strep attacks the side of her face. Well, my first reaction is: "What's wrong with you? I slept in the same place you did and ate the same things that you ate," which happens with a lot of people that I see. Luckily, it was my child and not my wife, because I don't think I would have been so compassionate and caring if it wasn't, which taught me another lesson: I should love my wife more than I love my kids.

Jeff Bookout 4:46

So then it's: Break down the data. Okay, I have a lot of friends that are doctors—ear, nose, and throat, and some other specialties—and sure enough, it was a mold reaction. It ends up being the HLA gene in her particular case. Her liver wasn't producing glutathione to remove those toxins, and they were staying trapped inside her body. So [we were] going through this journey with her in finding out why she was sick and I wasn't, one that obviously helped from this aspect of sitting down and talking with people. There are a lot of people that go into their properties, and the husband is not on board. The wife is not on board. "Why are you sick?" "I'm not sick." And it helps me because I've been through that situation. So that's kind of how I got started in this, but everything kind of fell into my lap

all at once. I had a couple of ear, nose, and throat doctors ask me [about certain things]. They knew what I did for a living in the past, and things were going great. [I was] working 80 hours a week. I had two babies at home. Not spending time with the wife and kids, things weren't going well. So I decided I'm going to put God first in my life and let everything else fall where it may. And when I did that, this door opened up, and I was asked: "Jeff, there's this company that was founded in Colorado. It's done wonders for ear, nose, and throat patients who are exposed to mold. Will you bring something like that to Oklahoma?" "No. That doesn't even sound fun to me."

Jeff Bookout 6:15

But [to make a] long story short—or making it as short as possible—I ended up going to a seminar. I met with a lot of property management groups. I was fascinated by that aspect because we went to Keystone [Resort] in Beaver Creek, and I love skiing. So we're in Beaver Creek. [There was a] condemned condominium unit, and the guy who owned the units was there. It was not rocket science to me. If you look in the master bedroom closet of each one of these units, that's where *Stachybotrys* was growing all behind the wall. At the time, I just knew it was black mold, right? But if you looked on the outside of the house, that's where they ventilated these units, and it's just a hole inside the wall. I'm not a rocket scientist, but it snows up there quite a bit. Snow goes right behind that wall; water equals mold, and there we go. So then they got to the doctor portion of it, which I was doodling on my notepad. I look up, and there's this young nurse taking this 80-year-old guy in my mind to the next room over. Okay. I look down; I look up. There's a 40-year-old guy. The same nurse is going to the same room. They said it was the same guy. "Wait, that's impossible," and that's what got my attention. That was an 80-year-old guy I saw, and he was dying. It was a country music star who got exposed on his tour bus, and they couldn't get him better. And he goes to these doctors, and there he was—not a day later, he was better. So that's kind of how I got introduced to this, to make a long story short.

Jeff Bookout 7:41

It's greatly benefited my family because now I'm at a point where Kenzie, my youngest, is fixing to go off to college. She has stayed in dad's bubble for the last 17–18 years, and now it's off to college, and—you have some story to this—you go off places and get exposed somewhere else. So it's those learning tools that I'll be able to talk about later that will help her along her path and journey, growing up, going to college, and going into an apartment [or] a new house. So there are some things and tips that I can give her.

Dr. Jill 8:11

Jeff, I love that. And you could take all day with your story. I mean, really, truly, those are the things that really matter. I always say: "I didn't choose mold, mold chose me." And it

sounds like you have a very similar story. My experience with mold was so horrific. You see me now; I'm healthy and overall doing great, but I was not like that. If I would show you photos of how scarred with acne and how swollen and how full of hives... I was in horrible shape and physically exhausted, and [had] brain fog. Literally, that year that I got exposed—the *Stachybotrys*, the worst—I don't really know how I survived. And I did. But part of that journey, just like yours, was because I really feel like God was like: "You know what? I'm going to teach you." And the best teacher is experience and struggle. You've been there, just like me. And again, that's why I recognize you, Jeff. That's why I recognize your heart. You go into every single house, every single patient you talk to, and you bring that heart. And that's so rare in this industry. Yet with these people that are suffering, I don't know if I've seen any other illness that's quite like mold in the fact that it affects the amygdala, which is the fear response, and it affects the brain. So it's not just someone who has fatigue who's struggling with an issue with their physical body. It affects the mind.

Dr. Jill 9:31

I've even had experiences where there was a church I used to attend that was moldy. Every time driving home, I'm not a depressed or anxious person, the world was ending. And I could see how people would be depressed or suicidal. And that's not me, but the mold would sabotage my brain for several hours. I really understood how it affects the mind, the judgment, and all these [other] things. So when you're going in there, you're dealing with these people who are already compromised, and what they need most is love and compassion. I think both of us can hopefully bring that to them because they're in a really dark spot. And then there are so few people who really understand it on the level that you and I do. That's an important thing too. Like you said, whether it's their parents, their siblings, people in the household, or their partners, most people think they're a little crazy, right?

Jeff Bookout 10:16

Yes. You're exactly right. Sometimes you have to play moderator a little bit when you're in there. I make people cry for two different reasons. One is coming in, and in the first 15 minutes, we sit down at the table and go over the history of the house, their history, and some of that. I don't know how many times I've seen the tears start to flow right then. "You understand?" "Yes, I understand. I've been there; I've done this." So yes. And the other part of the tears is that in my job, I have to be brutally honest sometimes. I am extremely compassionate, but sometimes people need to hear what they need to hear, and it is what it is with me. It's when this, XYZ, has to be done in your house, because, if not, you're living in this toxic mold environment. This has got to get done. And when you're talking [about] someone's livelihood, their money, and everything else, then the tears start coming. "I still love you, but you've got to hear this information."

Dr. Jill 11:24

That is so true. It's the same thing as [being] a physician; I'm asking them questions. I just had a patient the other day [with] a chronic cough who had been to ENT and pulmonology—the best in the world—[but] no one could figure this out. So all I did was say: "Well, when did this start? And how long have you been in that house?" "Well, within a week of living in this rental house, the cough started." "Mmm," you know. Both you and I are going, "Of course," right? And then, of course, I see mycotoxins in the urine that are metabolites of *Aspergillus/Penicillium*. I see a dust sample—because at that time, they didn't have an inspector yet—of *Aspergillus/Penicillium*. I put all the pieces together, and clearly, that's a trigger for a chronic cough. So we put the puzzle together. They'd seen dozens of doctors, but no one had put that together. No one had asked them about their environment. So it's so key. Tell me what you do when you first go in. When you talk to people, what are the questions you ask? What I want to do today is give people some tools to think through if they're suffering from symptoms, how they might involve someone like you and some of the common questions that people have. So the first thing let's start with is, what kind of questions are you asking people? Where are you looking in their house?

Jeff Bookout 12:37

You bet. And I'll come back [to this]; I'm going to put something in front of this too. But when I finally arrive at the house, obviously somebody suspects there is a problem—whether it's the doctor or you've looked at C4A, MSH levels, ERMI testing—whatever the case is. For some reason, we suspect something in the house. So, number one, we go over the history of the property: Past water leaks, backups, and floods. What type of moisture intrusion? Moisture equals mold, whether that is an ongoing leak, a past leak, water up against the foundation, a swamp cooler, or things that are allowing moisture or even humidity. Humidity—in my opinion, it's a debatable number—above 50%; so once you get to a 50% humidity level. I'm in Colorado every other week, basically, and I hear it all the time, "Jeff, we're so dry here." Colorado is; you're not. I'm in your basement, and you're at 65% humidity. Well, at 50% humidity, I know there are going to be pockets of higher humidity. And once you're in the 60–65 range, mold will start growing on surfaces, thriving off the high humidity and dust in the air. I went to a church not too long ago with 70% humidity. Mold was growing all over the back of the vinyl chairs. Well, it wasn't a water leak or a roof leak. It was because "we shut up the church." Everything got hot in Oklahoma. The humidity gets that high, and mold starts to grow. It's the same thing with a lot of schools; they do the exact same thing. It's always moisture intrusion that I'm looking for, so when we sit and talk, I want to hear past history.

Dr. Jill 14:17

I have a quick question. I don't want to interrupt you, but I think it's so important because of what you just said about COVID and things closing. [There are more] unoccupied

buildings. [There was] this lady with a cough; they moved into a home. For two years, no one occupied it. What's the risk there? You mentioned the humidity and the condensation. But would you be more concerned about a building that had been unoccupied?

Jeff Bookout 14:40

From a general standpoint, yes. Real estate transactions. This house hasn't been occupied for a year. Depending on where you're at in the nation... I used to travel the country, so obviously, here in Oklahoma, the humidity outside today is 85–90%. You're at 30% where you're at. In these hotter environments—Texas, Oklahoma, and even coastal states—it's more of a concern. Let's say that without a water intrusion, by closing that envelope, you're going to have generally high levels of *Microsporum* and *Cladosporium*. It can get all the way up and start going to *Aspergillus*/*Penicillium*. But if you had a water intrusion there to start with, so if there's a mold problem underneath the sink or in the bathroom, it just magnifies that by 1,000. It just allows that to spread.

Dr. Jill 15:29

Okay, so back to sources. I interrupted you, but I thought that might be important. So back to: Where else do you look?

Jeff Bookout 15:39

A lot of times, people don't know this information. Or, "Jeff, I moved here a year ago." So a lot of that is the instrumentation that we use. There are a lot of ways to test for mold, and that's kind of the precursor. Doctors such as yourself like the ERMI. There's ERMI testing, SDA agar plates, and Air-O-Cell cassettes—a lot of different ways to test the air. I look at them all because it is data, and I love data. But incomplete data does not complete the picture. So unfortunately, there's not a tool out there that I'm able to pick up and say, "There's mold behind this wall." It's a combination of a bunch of tools put together. Air testing is one that I love, whether it's qPCR or dust DNA analysis. I have a lot of people who do SDA agar plates or Petri dishes. They're a snapshot in time, but every tool has its flaws. Let's say you have a water problem behind this wall. The mold works like a dandelion out in the yard. As soon as you kick it, blow on it, or disturb it, the thing is just going to die and throw its mold spores to regenerate somewhere else. Behind this wall is my master bedroom, so if that master shower has a leak behind the wall, it's fat, happy, and content back there. It can still be releasing mycotoxins and mVOCs to make me sick, but the spore count may not necessarily be high. That's one of the flaws of that tool. There are infrared cameras. If it's not wet right now, the infrared camera is not going to find it. But it does a good job [in places] like Colorado [where] there's missing insulation. Well, if there's missing insulation there, there's more than likely a condensate issue there. Moisture meters—

Dr. Jill 17:17

I have a question about insulation. Is foam better than fiberglass? Is there anything with insulation where you'd recommend one over the other for people?

Jeff Bookout 17:28

I do. I see crawl spaces a lot. If I were building a house from scratch, I'd love to have this conversation because it's rock wool insulation. It's foam board insulation. It's not fiberglass insulation that's full of chemicals and petroleum. But most importantly, [I] especially [recommend these things] in a crawl space environment, which we have a lot of in Colorado. Let's say it's in a crawl space. Water has gotten into the crawl space and contaminated the soil. All those mold spores, mycotoxins, dirt, dust, and debris get trapped in that exposed insulation. So it's a problem. If I were doing an attic, if you want to use regular insulation, bag it. Use plastic-backed insulation. [Leave] nothing exposed. Closed-cell and foam-cell insulation—it depends on the usage sometimes. If it's below grade, I don't like to use it. In the attic, it's generally okay, as long as somebody doesn't have super chemical sensitivities. But it does give off VOCs. So foam board insulation and rock wool insulation are good.

Dr. Jill 18:31

Got it. So back to the sources. Colorado has swamp coolers and crawl spaces. I want to talk about those two in particular and anything else in particular. In our environment, we might not have the humidity, but we still have massive issues. So what do you see in a dry climate like Colorado that you might not see in Miami? Like, what should we be aware of in our patients? What are your top five most common sources?

Jeff Bookout 18:51

So the number one reason why people get sick from mold exposure is a crawl space, by far, and that's not just in Colorado. But it's that silent, hidden killer. Everybody wants me to come in and show them that big, black, hairy spot all over the wall. If it was that simple, you wouldn't need me, right? So that's the thing that people don't see—contaminated soil, if there's a lot of excessive mold growth in the insulation if it's on the subfloor. They're not in that crawl space. If they smell a musty odor, yes, you have a mold problem. That's in VOCs, or mold volatile organic compounds. Mold is feeding, it's active, and you have an issue; now let's find the source. So crawl space is number one. Second place is the swamp cooler. There, again, it's hidden. Stackybotrys is usually growing in the water itself or up the sides of the filters, so they don't see it. It is blowing those toxins into your environment. At least in Colorado, there's a lot of stucco. Some of the houses I get to see have straw/hay bale insulation behind the walls. So if there are a lot of cracks in stucco where it cracks over time, moisture gets into that. There's hay back there. As soon as that

hay gets wet, there's mold in a lot of it. I always say crawl space air, attic air, and air behind the walls will contain 5 to 10 times higher mold contaminants that are normally in your breathable air without a water intrusion. So it's [about] sealing off those outlets, light switches, and things like that. [By doing so], if there is a problem back there that's not recognized or is not very large, it just keeps that from coming into your breathable air.

Dr. Jill 20:35

I know, because I've been to your website, BioBalanceNow.com—we'll talk a little bit about your products—[and] you have videos on there teaching people very simply how to seal outlets and vents. And these things are really simple. I am so not mechanically inclined, but I think I could probably do it, and that's saying a lot. Jeff has videos on his site that explain it. Again, I love that you say that because those are houses that don't have a massive mold issue. You describe it best, but it's basically the airflow that should not be in your living space, and it's leaking in there. You always call it Scooby-Doo gas. Explain that just a little bit for our listeners.

Jeff Bookout 21:17

Yes. Having all girls in my household, it's Scooby-Doo green gas. So now you get a visual of this gas. It's not always the spores that make you sick; it can be the mycotoxins and the mVOCs. So now imagine a Scooby-Doo green gas, and now you can see it. You have all this mold contamination in your crawl space. Well, underneath your crawl space, where your kitchen is, you have pipes that go up into your kitchen for your kitchen sink. There's a hole around that pipe. Well, when your HVAC system comes on—your heating or your air conditioner—it creates so much negative air pressure. It's like a vacuum, and it sucks that Scooby-Doo green gas from those cavities and brings it up into your breathable air. A lot of times, when you find someone's small problem in their house, they'll fix just that area. And if you don't address the entire building envelope, that Scooby-Doo green gas is all over that building envelope. And if you don't address that, you're missing a lot of the picture.

Dr. Jill 22:20

Yes. So let's talk about practical things. So we've got crawl spaces, swamp coolers, attic air, crawl space air, inter-wall air—whatever you call that—all of these sources. And then there are common things that people don't think about. I had a small, little eight-inch circular leak under my sink from a garbage disposal that was improperly installed. Not a big deal, right? Well, no. So things like washer leaks and an improperly connected hose from a refrigerator under the sink and bathrooms and showers. Nowadays, gosh, I've seen so many brand new, beautiful, multi-million-dollar homes where the tile was improperly installed and the grout wasn't sealed. Tell us a little about master bathrooms because there are so many things that can go wrong with the construction [of the] master bath [and] the [installation of] tiles. What do you see in master bathrooms and bathrooms in general?

Jeff Bookout 23:11

Yes, and I'll use two analogies because I love analogies. One of them, you actually know the person, but I'll use somebody else. We get through most of the house, and the house is actually looking pretty good, and the guy had just put in a brand new shower. Well, he used travertine, [which is] highly absorbent, and excessive moisture is getting behind the tiles. That's one of the things that a moisture meter is great for. In scan mode, it tells me how much moisture is back there. And there's a certain point where I'm pulling tiles, and there's a certain point where I'm just resealing tiles. But in his case, it's maxing out my meter. And unfortunately, the shower is brand new, and he just built it. He did not want to hear it. Let's go back to a story that you do know. I go into her home, and sure enough, she's got excessive moisture—the same thing—behind those tiles. Now, you don't see that visually. Sometimes you'll see some cracks in the grout or some things where water is getting back there, but you don't always get to see that. So in her particular case, it was maxing out my moisture meter. And not even a thought on my part: "This has to come out a minimum of this high." So sure enough, we saw the pictures afterward, [which showed that it was] full of mold growth all underneath that cavity, not just into [inaudible].

Dr. Jill 24:31

All the way through the subfloor. So this entire wood subfloor was black. You see that all the time, but I was like: "Wow. No wonder!" This is an interesting story. No details, but the husband had been sick for years. It's funny because I talked to her and heard his story, and it didn't make sense with what they were putting it together with. In my mind, I thought, "I wonder about mold." But then, honestly, because I'm the mold doctor, the mold expert, I was like: "It can't be mold. Mold isn't everywhere, right, Jill?" Like, I actually pull back sometimes. I know about mold. The same with you; you probably see it everywhere because you know so many details about its potential. And it's amazing: I would guess one in four houses has issues, maybe more. What do you think about the commonality of this?

Jeff Bookout 25:16

Without a doubt. And I get asked that question all the time. "Jeff, how many houses did you go into and you didn't find mold?" It's a loaded question because I was hired from a medical perspective, so more than likely there's mold there before I walk in. The chances are pretty high. Even in my own home, Jill, this is funny. I do this for a living. I had three major water intrusions in the last year in my house. One of them flooded at least a third of my house. I do this for a living. We're all going to have problems. It's, "Can I dry it out within 48 hours?" And if not, I need to remove those damaged materials and treat the air. As long as everyone understands that protocol... "Jeff, how do I get into a mold-proof house?" Good luck. You have water to it, so there's always a moisture intrusion. You're going to have it happen. It's: Let's do things to help prevent it, like putting those little WaterBugs underneath your

kitchen sink in your laundry room, things like that, to alert you to those areas that could have leaks without you knowing it for a long period of time.

Dr. Jill 26:20

Yes. So let's switch gears just a little. I like that because it's the same way for me. I had this little water leak under my sink, which I still haven't taken out of the woods, Jeff, but I promise you I will. Every time you come over, you're like: "Jill, cut it out. Bad, bad, Jill." But I will. Some practical things: I have a rubber mat. [The leak] is under the sink. I'm going to actually cut it out and replace it. But if I had done that first, which is the first step, a rubber mat could be helpful. And then what you do is buy a little water meter that sits on that mat. So if there are a few drops of water, it'll start to alarm. What happened before was that a week or two went by and I didn't know that there was a leak under my sink. It's super common because you don't hear it, you don't see it, and you don't smell it. And that leak could be going on for a year or two before you notice the wetness or the moisture.

Dr. Jill 27:09

Washer/dryers—again, you can chime in here. I still have a front loader, but I got one from LG that has the widest rubber gasket and is tilted. Nowadays, a lot of the front loads are tilted, and they're very specifically designed to be anti-mold. I still run a botanical product through there every month to kind of be sure, and I make sure to replace my gaskets every year too. So I still have the front load, which is not recommended, but I feel like I've done enough with the style and the gaskets. I did a lot of research on it, and I feel pretty good about my front-load washer. If you want to be sure, a top load is always going to be safer than a front load. I'm sure you see a lot of mold in the gaskets, right? What other preventative things could we do with windows or attics? We talked about sealing off the airflow, but is there anything else you'd recommend as prevention for baths or kitchens?

Jeff Bookout 28:01

Yes. What grows mold? Sheetrock, right? So if I'm underneath my kitchen sink and I'm replacing anything, that's going to be Hardiebacker board or concrete board instead of sheetrock. I kind of take away my building materials in the master showers. And this goes for every single person out there: If you have a tile shower, you need to use a tile grout impregnator probably every two, three, or four years to redo the seal on that grout. If not, over time, water keeps hitting that grout and breaking down the waterproof barrier that it has, and you need to reseal it every few years. So there are a lot of things.

Jeff Bookout 28:42

Let's talk about attics. For attics, you need to have a way for air to get into your attic and a way for air to get back out of your attic. I was in a guy's house last weekend; it was 75%

humidity in his attic because it was so hot and he had very little airflow. Humidity equals mold, so let's make sure we have airflow in those attics. The second thing is making sure that my attic air does not communicate with my breathable air. So little tips like that around the house are always great because basically everywhere you have a water source is a source for mold. For humidifiers attached to the HVAC, I see that a lot in Colorado, that filter has to stay clean. The filter housing has to stay clean. The drain line that sends that condensate down to the sewer drain needs to remain clean because if not, every time your HVAC system comes on, it goes in there.

Dr. Jill 29:33

Okay, there are so many questions on my mind that I think people want to know. So let's talk about the filtration system. How often should you change your air filters? What kind of MERV rating is possible? What would you do with your furnace and HVAC system for maintenance? And then, also, what would you do to clean it if there had been an issue?

Jeff Bookout 29:51

You bet. There are five things in my own house that I always suggest everyone do. I'll get to the two at the very end because we haven't talked about that. But the MERV, rating of 11, filters. Everything will have a MERV rating on it. Sometimes HVAC companies don't like a lot of air restriction. So if you have a really old unit, sometimes they're not good to use. But in my own home, that's what I change out at least every three months—a MERV rating of 11 filter in my HVAC system. Number two: A good air purifier. Austin Air is what I have in my own home. If we're on a budget, put it in the area that you're spending the most time in. That's generally your master bedroom. And they're portable; you can move them if you wish. In my house, we have three different ones. I'm not trying to cover all of the square footage, but I want a good air purifier in my home. Number three: Dilution is the solution, so sometimes airflow is the big key. In Colorado, you open your windows and doors a lot, but what about the basement? A lot of times, that gets missed. So an HRV system in the Colorado area for warmer climates is called an ERV system—heat recovery ventilation. You're basically bringing fresh air in and taking old air out because you have this little building envelope. Anything that happens in there stays there. Mold, radon, Lysol, hairspray, bleach, ammonia, perfume—all those allow for this toxic little pit that you live in. So get proper airflow in there and get everything diluted back down.

Jeff Bookout 31:23

The other two that we didn't talk about are on my website: I dry-fog my own house once a year. And we'll dive into the dry fogging a little bit or some of those solutions. But it's GSC-based—grapefruit seed extract. What do I want to use in my house that is safe for my medically sensitive daughter? So it's a true dry fog form. It stays in the air for 30 minutes

to 2 hours, being able to capture all the excessive dust, dirt, debris, mold, viruses, and bacteria and get them out of the air. I do that once a year in my own home, no matter what. There's a liquid version of it that's a mist. We use that once a month throughout the house, and that's how I maintain my environment and how Kinsey will when she goes off to college. So it's those little things that help maintain your own house. Then, if you do strategic things around the house, like the WaterBugs, [that is helpful]. Walk around your house once a year. Pretend you're Jeff. Not a lot of it is rocket science. Hey, if there's water there, I'm going to open it up and take a look at it. If it smells or looks funny, I may need to holler at somebody.

Dr. Jill 32:25

Yes. So the fogging—let's stop there real quick. Just to repeat it, we'll list it: BioBalanceNow.com. I've used this product personally. What I always get from patients is, "I'm super sensitive; what can I do?" I know Jeff has told me, and you'd back this up: You could have a bowl of cereal sitting out, you could fog, and you could eat that cereal. Now I use GSE on patients all the time to treat fungal overgrowth. I use it as a nasal spray. I use it as oral drops. I even put it in my dog's water. So this is a very, very safe botanical, and it treats Candida and mold. So to me, it makes perfect sense. I typically recommend, as you do, Jeff, that if you're really sensitive, you maybe have someone else do the fogging and get out of the house for 12 hours right after. Is that what you'd recommend?

Jeff Bookout 33:08

[nodding]

Dr. Jill 33:09

It's not harmful. It's only if the patient is sensitive. They might actually have die-off from, say, sinusitis, Candida, or issues in the gut. I know when I treat patients with GSE, I'm like, "Go slow because you might have a headache or you might have brain fog," because they're killing off this toxic organism. So it's not that it's toxic, but if you are colonized and you are breathing in that fog... My friends, the ones we just talked about, did the fogging, and they both had a little bit of a headache—they were fine—because they were colonized; it's not because the product is an issue. So tell us exactly: How would this fog work? They can get it from your website. They can buy the fogger themselves. That's what I did. I actually have all of your products because I plan on doing my office and my house at least once a year. I have the travel version; I have it all. Tell us really quickly [about] the basic fogging, what people would do, and how that would work in their homes.

Jeff Bookout 34:01

I'm going to preface it a little bit. So let's start with [this]: In a perfect world, I want three things to happen when we have mold contamination. One is that I need to find the moisture source and make sure that it's removed. Whether that's high humidity, an ongoing leak, or water against the foundation, the moisture has to stop. Number two is finding and identifying those mold-damaged materials and making sure they're removed and replaced or proper corrections are made. There is no substitute for that. Then, number three, we treat the air to get all those excessive mold spores and mycotoxins back under control. In a perfect world, it's always removing that source. Make sure nobody misunderstands anything: If there is mold colonization, it has to go.

Jeff Bookout 34:43

Now, can I buy you time? We had this question earlier. "Jeff, I'm in an apartment complex. I have two, three, four, five months left on my lease. I can't get out. They're not going to fix the problem for me. What can I do?" Let's fog, let's treat that air, and let's immediately at least buy you some time. It's not the perfect thing. I've also heard this as a negative comment coming back from a few sources: If you are treating the mold and there's still colonization in there, they'll be putting out more mycotoxins. I've never found that in my case. I've done this for 17 years, treating people's houses; I have never seen or heard of that. So I always believe in: "At least I can buy you time. I'll clean your air as best I can until you can make those right decisions." Or, "Jeff, I can't afford to make all those remediations yet. So I'm going to fog first, do all the steps, then fog afterward." And that's fine. At least it gives you an alternative.

Jeff Bookout 34:43

I always say people like Jeff, an IEP, or a mold inspector are always the best to have in an environment. Not everyone can afford to have me out. I understand that. So I want to be able to appeal to everyone. What can you do if you can't have me there? JW Biava at ImmunoLytics labs—they have come up with a medical scale for SDA agar plates. Test your air yourself for a fraction of the price. It's the cheapest way to do air testing that I've ever seen, and it's reliable and accurate as long as you don't have mold behind the wall cavity. Then they also get a consultation from them. Somebody like me who is in the field calls them and goes over those results. It's not as good as having somebody like me there, but at least we have another solution out there.

Jeff Bookout 36:35

It's always best to have a professional remediation guy remove and replace your damaged materials. A lot of times, that doesn't happen. I understand that. I try to educate them: Go to Home Depot and get a ZipWall system. Contain that room. Rent a negative air pressure and air scrubber machine and use it while you're taking out those damaged materials.

There are ways in which we have allowed you to do it yourself. I treat properties all the time with that fogging. There are also do-it-yourself kits at BioBalanceNow.com. So that is not rocket science. To me, in my house, it's Halloween time or fall festival time. All the kids love me; we fog up the house. My kids play in the middle of it. Again, I know my kids' breathing habits and everything else. If you go on the website, there are precautions: Stay out for at least 24 hours. Wear a little N95 mask while you're using it. TSA made me put it in my mouth and in my eye to get it on a flight to Salt Lake City before.

Dr. Jill 37:37

Wow! [laughing] Great.

Jeff Bookout 37:45

It got me on the plane. So let's talk about or dive into a little bit of what the dry fog is. Why do we use dry fog? Some people say it's a dry fog, but basically, it's a wet mist that goes up in the air. Imagine taking a Windex bottle and spraying it up. It's a really fine mist. It falls out of the air extremely quickly. Imagine mold spores as golf balls, so now I can see them in the air. If you take water and throw it up into the air, you're going to capture some of those golf balls, but not a lot of them. So dry fog, staying in the air for 30 minutes to two hours, is able to flocculate everything together and get it back out of the air, which is another perfect point: You'll see on our website that I want you to do a good general wipe-down of all your horizontal surfaces afterward. If there are dead mold spores, viruses, bacteria, dust, dirt, or debris that have fallen out because of that fog, do a good general cleaning of your horizontal surfaces.

Jeff Bookout 38:44

In a perfect world, Jill, if you could do a small particulate clean [or] have a company do [it]—there's a company in Colorado that does that—great! That's about \$6,000 to \$8,000. And if you can afford it, man, I love it; let's do it! But if not, do the fog. Do a good general cleaning to get rid of it and start over with new dust, dirt, and debris. So we talked about GSE, grapefruit seed extract, [or] lemon-lime-tangerine extracts. The dry fog uses food-grade propylene glycol as the carrier, so it's allowed to stay in the air. I want it in everything: Your cabinets—

Dr. Jill 39:17

You're opening the drawers. You're opening everything you can so that this actually gets on [hidden surfaces], like in your clothing drawers and in your closet.

Jeff Bookout 39:27

Yes, because it is not wet-based.

Dr. Jill 39:29

Got it. I'm going to try to recap from [the perspective of a] layperson, and you tell me if I got anything wrong for people listening. So say you have a mold issue. First of all, ideally, you get an inspector. But what Jeff and I understand is that some of you can't afford it, or you need to find a way to get by initially. And there are things [from which] to get little ideas of what might be going on—nothing is perfect—[such as] plates, ERMI [testing], and dust sampling. There's actually mycotoxin DNA sampling. So there are ways you can do it. I agree with Jeff that none of these are perfect because I'm the same way in my office, needing data, but I don't always have an inspector to help me like Jeff. I often ask the patients for ERMI because I've seen enough of them.

Dr. Jill 40:06

Now, let me talk really quickly about ERMI, and you can correct me if you feel differently. I think we're on the same page. I don't even look at the score at the bottom. The validation of that test has been kind of thrown out the window. So the ERMI score itself—I look at the number, [but] I don't make too much out of it. But what I do is run down the individual numbers because I know which molds are really nasty. If I see above 5 of *Stachybotrys* or *Chaetomium*, those are such nasty molds. They cause immune compromise, kidney dysfunction, lung dysfunction, and brain/neurological disorders. So if I see above 5 of those, I'm concerned. Whereas for *Aspergillus*/*Penicillium*, it might be above 100 or above 50. I'm still concerned, but those are the guys that I don't even want to see at 1, but if it's above 5, I'm concerned. So I'm actually looking at the numbers. I do a HERTSMI score. None of these are perfect. Sometimes I'll see some random thing like *Clavisporium* at 200,000. Well, that's not a common mold that causes massive toxicity. It does cause respiratory irritation, but with a level of 200,000, there's going to be an issue somewhere. So then we know [it could be the] crawl space or—

Jeff Bookout 41:09

Yes. There's probably a crawl space, yes.

Dr. Jill 41:11

Exactly. So I do like the ERMI because a patient can do it on their own, but optimally, inspection [is best]. So then we find the root cause. Say it's a shower tile issue, or say it's an under-sink issue where some particle that has been porous, food for the mold, has gotten damaged. No amount of fogging will take care of that problem, but it might buy you time. So you ultimately have to take out the material and get remediation. Or, like Jeff said, we don't recommend doing it yourself, but if you have no other options, at the very least

understand contamination containment. What happens is that I've seen too many times someone try to do it themselves, a husband who means well, and they don't contain it and they get way worse. They make their wives way sicker because they blow it up. So you take that material out, clean it up, contain it, and then do the fogging. And I usually recommend that patients get their HVAC systems cleaned. Would you recommend that, Jeff, before or after the fogging for the cleaning?

Jeff Bookout 42:08

Always after. The reason why is that if there are a lot of excess mold spores that are up in an HVAC unit, we're taking care of those with the fog before we get in there with a rotor router and spread everything worse.

Dr. Jill 42:23

Got it. I think I have some personal experience with this. I did some sort of treatment that wasn't the dry fog—I won't mention any names—and it made me way worse. What happened was that I had a very dirty HVAC system. I think it dissolved; it kind of spread everything around, and it didn't really take care of the issue. Your system worked. So to me, there was a really big difference. And partially, my problem was a really dirty HVAC system that needed cleaning afterward. Now what's funny is that my dog is whining, and I want to talk about pets. So what do we do with pets? He must have heard me and known that we were going to talk about pets. What do we do with these guys?

Jeff Bookout 43:00

You bet. I always look at two different things, elephants and red flags inside your house. Now, generally, your red flags... Your pet. It isn't always the thing that's making you sick, but it contributes to your toxic barrel. And I don't know if the plant is real up there on the right-hand side of where I'm looking, to your left, on the wall.

Dr. Jill 43:17

No, it's fake.

Jeff Bookout 43:19

Okay, good. So plants are a red flag. So what can we do with pets? There is a company called CitriSafe. It is spelled CitriSafe.com. They make a pet kit. It has shampoo, some stuff you can spray on them, GSE drops that you can put in the water, and things like that to help maintain my pet because I'm not going to get rid of my—it's not a dog, it's a Yorkie. It's four pounds; you have to be more than four pounds to be a dog. But I can treat that. Or the same way with carpeting: I do not like carpet. I didn't win the battle in my own house, so I

have most of the carpet gone, but I'll use the Haven Mist from BioBalanceNow.com or the Haven Clean to clean my carpeting with. And again, on CitriSafe's website, they have laundry detergent, which is another thing that comes up a lot. I looked at a mold report, which is the SDA agar plates from ImmunoLytics.com. I was looking at those, and everything in the house looked fine except the blue bedroom closet. And if she hears me on this—I'm talking about you—the blue bedroom closet had excess amounts of Penicillium in it. My first thought is, "Okay, is there damaged carpet in there or something behind a wall cavity, or is it just the clothes?" which is very possible. So treating it or washing your stuff in that laundry detergent would be a great idea.

Dr. Jill 44:56

Oh, you just hit on the last few things we'll talk about. So I want to talk about items in your house and what to do if you really have a big issue: What can you save? What can you not save? And then another thought came to me: Standing water. That's always a problem, right? Because people are like, "Oh, well, I have a sump pump that has standing [water]." Whenever there's standing water, whether it's a plant that's overwatered, a sump pump that's flooded, or a crawl space, that's always going to be an issue, right, Jeff?

Jeff Bookout 45:21

You're exactly right, because what grows in standing water? After 48 hours, microbial growth: Bacteria, mold, viruses, and bacteria are all going to grow in there. And if you look at how a sump pump works, there's always standing water at the bottom of that sump pump. If you have a water issue, then as soon as it gets to a level high enough, it pumps it out. But there'll always be standing water in there. Get a plexiglass cover to completely seal it up. Or, they make fully enclosed units, but the air in that pit cannot communicate with the breathable air. Fish tanks are a problem waiting to happen. You open up the lid, and you see all the mold and algae growing on the bottom of it. I don't mind the flowers that you got for Valentine's Day. That's okay. Those are in and out. But permanent things that have standing water in them are a mold problem waiting to happen.

Dr. Jill 46:15

Yes. I love that you say that because I have this beautiful water feature in my office and we don't have water in it. I don't even want to tell you the cost. It's a full marble fountain that's so beautiful, and I don't run water because of my patients. I'm okay with that, but I had to understand that it's standing water, [which is] not going to work in my office for sure. So the last thing I want to touch on is items in the house. I'll talk a little, and then you add in where I might have missed things. So first of all, let's assume there was a big mold issue in a home or environment. It's been remediated; the area has been fogged. So you've done everything you need to do. What do you do with your books? In my experience, paper

tends to be difficult. Now, sometimes we'll have scrapbooks and things that are precious. What I tell patients is that "if there's stuff that you don't want to get rid of, put it in plastic bins stored away from your breathable air in your garage until you get well, and then you know it's safe."

Dr. Jill 47:08

I had all these medical books from my office, and they were precious to me. I stored them, but two years later, I opened them up and got sick. I got rid of them, so I knew that those books were not going to be in my house. Now, I've heard of patients who do ozone treatments on certain things, but I would not count on that if you're very sick from mold. You want to be careful; books or paper can be an issue. I always tell the story: I moved to a new office after my office was filled with mold, and I took nothing with me except my patient charts. I stayed sick, and I had labs that proved it for three months until I scanned those charts. So that paper was literally the only thing left from there, but it kept me from feeling well. I found that you can wash clothing. I know CitriSafe has a botanical product you can use in laundry, and there are a few other things out there. I would try to use a diluted borax solution, CitriSafe, or something along those lines to wash your clothing. In my mold experience, I had no clothing that I had to get rid of. But there can be things like leather goods or stuff that's not very washable that you may have to part with or be cautious with. But again, in my experience, clothing can usually be washed.

Dr. Jill 48:13

Mattresses—that you're sleeping on. I would not take a chance. I say, get rid of your mattress. I'm sorry to say that, but that, to me, is non-negotiable. The same with pillows. The linens on your bed could be washed, but I'm just like, "Don't mess with it." I had a beautiful family of four. I think you've worked with them too. Two darling little kiddos. They had completely remediated their house and done everything. And around the holidays, they were going to get a new mattress, and they had still not been feeling well. Well, for fun on their way out, they all took the mattress down the stairs. Like, "Let's play on the mattress and slide down the stairs." They were so sick. All four called me the next week, and it was all because that mattress had puffed its mold spores and VOCs all the way down the stairs. The entire family got sick. I'm like, "Well, that teaches you not to play on a moldy mattress." It was a funny story, but the truth is that mattresses are bad. What other things would you think about warning people in a home [about] that they'd have to be careful with after mold exposure, [as far as] re-exposure?

Jeff Bookout 49:08

You hit everything on the head, [including] probably your top four things. Books and papers—they're horrible. They absorb a lot of mycotoxins. My number two is mattresses as

well. I always tell everybody [to buy] new pillows every two years, no matter what. It's amazing how much you drool and sweat. Now, if you had a protected cover over your mattress, it may make it a little bit better. But especially if it's over eight years old, get rid of it. You used that analogy of them going down, and it hit me in my mind. I was around Fort Collins, and [there was a] sweet lady. She was awesome. Luckily, I'm a redneck. But we were up on the top floor in her master, and she said, "Jeff, every time I sit in this chair, I get sick." I know that chair because my grandma had a chair just like that. I said: "It's like carpet. You just get, over time, so much dust, dirt, debris, and mold spores. It just accumulates, and there's no way to get rid of it." "Well, Jeff, can you get rid of it for me?" "No, I'm sorry, I don't do that." "You can throw it over the balcony." I'm a redneck. So I pick up this chair and throw it over the balcony. But I wish I had the camera on because when it hit, the cloud of stuff that came out of that chair was horrendous, and they're all looking at it. I was like, "Oh, how nasty." Well, that's the perfect analogy for what happens to mattresses.

Dr. Jill 50:29

The mattress down the stairs and the family that got sick. I know. It's a great story because it's so relevant. And I love books. I love libraries. I love old bookstores. Guess what I never go into anymore? If I'm on vacation, I see an old bookstore, but never, never, never [do I go in] with my history. And if you're listening out there and you've had mold issues, I'm sorry, but old bookstores are not your friend. Libraries could also be an issue, even if they're new and clean because they have old books. And then the other thing—secondhand stores and Craigslist furniture—be careful. We all want to save a buck, and I'm all for that. I used to love secondhand finds and cool things. I don't do that anymore because you just don't know where they've been.

Jeff Bookout 51:11

Yes. So a general rule of thumb for all belongings: No visible mold growth. No visible water damage. Most importantly, no malodor. I have one of those God-given gifts as a nose. It smells like either the musty old basement, urine, or an old antique smell. But if your nose is different, if it smells funny, get rid of it. "Jeff, it's an item I want to keep." Okay, there are some things that we can do to help that, and we'll get to that in a minute. So it's no malodor. Then four, if you still have a reaction to it... The Salt Lake City story—long story short, I still had my gear on my back, and I went down to their basement. The wall looked funny. I put my hand on the wall, and my hand goes through the wall. "Oh no!" Stackybotyrs are all behind there because of a sprinkler cavity. But I remember seeing all their clothes in the unfinished basement, hung up on string. It's like: "Man, there's no way. All of this stuff is going to be contaminated." But after treatment, the only thing that she wasn't able to salvage was a couch. There was no visible mold, no visible water damage, and no malodor, but she still had a reaction to it. So if you fall into those four categories,

it's best to get rid of it. "Jeff, it's my wedding dress." Okay, we can try the CitriSafe laundry detergent. We can set it out in the sun. There are some things that we can do to try to salvage it. But if it still has that malodor, get rid of it or put it in a sealed plastic container and get it outside of my breathable air.

Dr. Jill 52:43

Yes, good. Good, good, good. Gosh, we covered a lot. Any other last tips or things that you can think of that might be important for people listening who maybe don't have access to you or me? If you guys are listening or looking through the feed, I put BioBalancedNow, and I put CitriSafe. Oh, and I'll mention my new product at the end here, Jeff. I'll tell you about that. I think you know about that. But tell me: Are there any other tips or things that you would like to tell everybody who's listening? Any last things?

Jeff Bookout 53:13

Yes. And we've gone over them, but it's the three things we're looking for: Stop moisture, remove damaged materials, make proper corrections, and treat the air. Those three things are a must. Then the five maintenance tips that I have: Fog once a year. Haven Mist, which is the wet-based solution, once a month because it's cheap and easy. The MERV 11 filters. Proper air exchange and Austin Air. So it's [about] staying in that maintenance routine. Going forward, all your patients are sensitive. They have the HLA gene or MTHFR—there's some reason why they're getting sick. They need to stay on that maintenance protocol.

Dr. Jill 53:50

Yes, gosh, I love it. And thank you for being available. For every person you can see, there might be a thousand people who watch this who can't see you or me. And I know that there are pearls here that are so powerful. I wish I would have known all of this five years ago, but we were both kind of chosen to do this work. So here we are. I just wanted to add this at the end for any of you listening: I did the same thing as Jeff: I developed a product. It's called the Miracle Mold Detox Box. This is for people who can't see me. It's not perfect, just like anything else. But it's a great, great tool for those of you who are suffering and want to get started but maybe don't have a physician to guide you on the journey. What I would say is to start slow. I put the link in there. It's molddetoxbox.com. Today is actually the official launch. I didn't plan that, but I wanted to be sure and mention it because the website is up.

Dr. Jill 54:37

It has so much information. It's got testimonials, interviews, information about all the products, and, of course, any of you who know me or see me, our ingredient reader, label reader. So it's got everything listed. There's no gluten, and there's no soy. There's nothing toxic in it at all. The basic [idea] is that we're mobilizing toxins with glutathione and liver

support. We're helping your body excrete with binders. And then we're replenishing your body with electrolytes and NAD, which is a cellular energy source. So I've put a ton of thought into this over the last several years. It's in combination with Quicksilver Scientific, which makes really great liposomal products. I'm so excited to have this launch because I know it's going to help many, many people get started—[those] who can't see an expert like Jeff and me. I'd recommend that if you do purchase the product, start slowly. But it's a great, great kind of all-in-one. It's a 30-day mold detox box, and I'm so excited. So thank you for letting me mention that because today's the launch, so it's out.

Jeff Bookout 55:36

I'm excited. I actually looked it up the other day because I was sending somebody to get that. And it's like, "I don't know if it's available yet, but here's where you need to go to get it." So that's awesome. It's going to be great.

Dr. Jill 55:46

Thank you. I love that we can collaborate because, again, I can't do what I do without you, Jeff. You are just a gem. You're so wonderful at what you do. You're so generous with your time today. I know that's valuable, but I know both of us together today have hopefully answered questions and helped a lot of people. So thank you from the bottom of my heart for being here with me.

Jeff Bookout 56:05

No, thank you, Jill. That's been phenomenal. Anything I can do to help along the way, that's what I'm here for.

Dr. Jill 56:11

Awesome. We'll talk soon.