Introduction and guest background

Welcome to this episode of Mold, Mycotoxin, and Chronic Illness. I'm your host Dr. Ann Shippy. Today we have Mike Schrantz. He's a building scientist.

He's the owner of Environmental Analyst Politics in Tucson, Arizona, where they do environmental assessments in residential, commercial, medical and have a global reach.

He's the member of multiple organizations to try to help advance this deal. He's very passionate about it. I think he goes and breathes it. So I'm really happy to have you here today. Mike.

Thanks so much for taking the time to share your wisdom. An absolute pleasure and I look forward to it. Yeah. So I think at this point, at the most challenging areas of helping my patients get well from mold and mycotoxin Illness is really making sure that we get them into a clean environment.

And so as you play, you and your peers play such an important role for us, and yet we're not building scientists. And yet, you know, a lot of times I have to help guide the process. So I'm really grateful for people like you that are, you know, really partnering with the docs and really care deeply about helping people get well.

Yeah, absolutely. Definitely. The Village definitely takes an effort of the clinical discipline and the environmental discipline to get it right. And I'll tell you what, if there ever was a common theme in the different camps of chronic illness.

It's to get out of exposure when the environment is considered to be that type of an exposure. So, yeah, I can't wait to dive into it with you. Yeah. So let's start out with the first step.

I've told my patient, Yeah, I think at least one of the important root causes is that you're you're being exposed to the toxins from toxic mold, and you need to figure out where it's coming from.

So you need to choose an inspector. So usually I'll give them two, three choices of people that I've worked with before. But I tell them, you know, it's really up to you.

You get to pick who you want to work with. And of course, I have patients all over the country. So there are some areas that I know people that they can access better than others.

So for the person that's choosing an inspection inspector. What kinds of questions, what kinds of things should they look for? You know, I think the I can't wait to give you a couple of good resources for your for the audience as well. But, you know, honestly, it's a passionate understanding about exposure and chronic illness.

Unfortunately, there's a there's a it's almost like a light switch in our industry. You either seem to be cut from the cloth. That's a traditional inspector who is going to go into your house for 30 minutes with an infrared camera, look for thermal anomalies, say that they don't see a waste or a mold problem.

Maybe take a sample in the air in the living room. Everything looks okay and they're off and they just charge you for it. And your doctor is getting confused because the data doesn't seem to match the hypothesis of exposure.

And then on the other side of the equation, you have those who do understand. You have those who realize that this is not an issue of trying to find something that has to be 20 square feet of mold growth on a wall to justify a problem.

Most of the issues that I work with, with clients on are hidden. You don't you don't see them. In fact, I love it. Not for

the client's sake, of course, but I love it when I do have an easy one where it's like, Oh, well, there's you know, you have all that mold right there.

You should obviously address that. Normally it's hidden. So I think it starts with a a thorough understanding and appreciation for your chronic illness.

These IEPs and or environmental professionals, they don't they're not doctors. We need to stay in our lane. And any IEP that's out in the field that's telling you about mold and how it's this, it can make you sick and get into the details and maybe tries to address your symptoms that you don't want that sort of individual working for you because confusing and it can it can run in the way with what people like and are doing to help you from the clinical side.

How to choose a mold inspector

However, being able to appreciate the fundamentals of what is what is exposure to toxins, what is chronic inflammatory response, what is Lyme, what are the other sorts of chronic illnesses that are affected by this is key.

Sitting down and talking to you about that and taking the time to learn your story, I think that's where it all starts. And I mean every client I work with, I'm if I'm out in the field with them, the first 30 minutes of my visit is sitting down and talking to them.

It's learning. It's it's like a basically like a client interview, a client intake, just like you probably handle your clients when they walk through your door.

Yes, I love that part of it, too. It sounds like you to where you really get to establish the relationship and really get the context for what we're up to.

What we're and what we can learn. They'll tell us little tidbits of things that they just overlook. I'll I'll eight times out of ten, I'll have a client tell me something, will ask about the history, and then they'll just nonchalantly say, and then we have this little toilet overflow league.

But that wasn't much. And they'll keep on talking with all of the pump, the brakes and go, Wait a second. Do you mind telling me a little bit more about that?

And so it's there are so many pearls that you can learn because so many people assume that unless it's a flood or a major league that flooded headquarter of the house, that it couldn't have produced a microbial issue in their house.

Beautiful. I think that's that's really one of the signs of a good inspector, is somebody who is really helping to and cover that is clues it. Go ahead.

No, sorry. I was going to say it's challenging because you know that that's a great, important point. I know that there's a lot of things that still people there's you don't want to hire somebody who's going to take advantage of you or they might be a great salesperson, but they might not actually understand what you're going through.

It's been such a challenge in our industry and probably why you ask the question that we've done a couple of things in the industry to help individuals, for example, and a minor shameless plug for IEP radio, which is the what I am the host of.

It's a free resource for those listening is that Episode 28 talks about what to look for and it gets into the details of it. This idea of not playing doctor, the interview with the client.

I'll just I'll just broadly stroke it. We can dive in where you want to go next, but the visual assessment, the walking through the house or the building to see what are you seeing that's obvious or suspect the huge topic of sampling and what questions do we think this sample is able to answer?

And then, of course, does it make financial sense to spend money on that? And I would say most importantly, too, is what's the output? We have a lot of clients that come to us and they'll hired an inspector.

I did a decent job. I know it's a bit subjective, but then they'll hand a report in and it'll be just a copy of the laboratory findings of the lab data.

But they'll have the title. Like my my title right here will be on it. But there's no interpretation. We often don't leave, environmentally speaking, the interpretation up to a laboratory because the interpretation of mold and mycotoxins, they very complicated field because we live on a thing called Earth or we're surrounded by mold and mycotoxins and we're going to have a normal background level in the lab, doesn't sometimes be able to or not able to really understand if a level was elevated or not, but yet they'll leave the lab to do the interpretation and then they'll sell them, have any recommendations.

So if you're working with an IEP, again, indoor environmental professional, and they're going to do all the other things that we've talked about, they've sat down with you, they've talked to you about what their plan is.

They're sampling the value of it, what questions the limitations of the samples. I mean, to be very transparent, they need to be able to produce a report with you with recommendations, detailed step by step recommendations, not something that says, I think you have a problem in your basement.

Good luck. Figure it out. But here's what we've identified in your basement and here's the step by step recommendations to remediate it. That's beautiful.

So do you think maybe a way to assess that would be to ask for a sample report from a couple different inspectors and. Do that all the time? The the level of effort that goes into. Yes.

Into I mean, some of those reports are they probably can take a whole day to write, right? Yeah. Yeah. I would say to your point, asking for a sample report can go a long way.

And the great thing about what Ann just brought up was that you could do that before they even step foot in your house. I mean, this is just like you.

Email me something, show me an example of what you do, and then you can review that and say, okay, I understand this, this makes sense. And that's kind of the quickest way to do a little litmus test of what of what they can.

I think the other end is, of course, and we might dive into this a little bit later is overwhelm what is an analysis paralysis and the idea of getting a 150 page or 100 page report, 50% of it, which is boilerplate, and the client's eyes going cross-eyed because they don't really know what to do with all of that information.

They just kind of want a nice, simple takeaway. Yeah, you might want that data like as an addendum, but really what you want up front is, okay, here's where the problems are and here's what I need to do about it.

Absolutely. Absolutely. I mean, the summary page with the what bottom line is call it what it is a lot of times the reasons that IEPs, like even myself, will have such a lengthy report is a combination of education and liability.

You want that. You want them to understand. But really it's the whole because it's hard to say just one comment about something like when someone says we found a mold problem, what does that even mean?

Yeah, the mold problem. A square inch of mold underneath your kitchen sink. Is that mold? That's more than that. Underneath your kitchen sink. Is it mold?

That's that plus mold that has transferred throughout the house or cross contaminated. What's a mold problem? So you end up disclaiming a lot. And that's all well and too. And to an extent that's understandable and appreciated.

But Ann's point, if you can just put the main stuff in the beginning and then and then have a summary of what the recommendations are going to be, then you can always catalog in a good report will do that versus just throwing everything at you in one big report.

That's not really broken out the way we're talking about and you're left overwhelming. So yeah, that's a great suggestion. And we've done that a lot with virtual clients where we don't know that the IEP is.

We'll say we'll get a copy of the report. Let's see what they can do here. So we could segue way to so many different things. Now, like I said, I get to do this with you.

I think maybe Let's go ahead and talk a little bit about sampling because you know, what I've seen some inspectors do is like go through the entire house and collect a whole bunch of samples and then sit down with you at the end.

Once they've seen everything, done everything. And then you strategize on which samples to which sample samples actually test. And then after we do that will go into the types of testing for sure.

You're going to have to ring me in from time to time on this, I'm guessing am, but I'll do my best to address this, which I love that you pitched this to me.

Yes. Sampling. So let's be clear on an assessment. It's not just the sample data that we're looking at. We're taking in mind. We're weighing that A with and or against the historic or visual evidence to support a finding and a conclusion or recommendation again.

And the reason for that is, is because if we had a cheat sheet that said this particular mold species 14 is good and 15 your arms going to fall off, it'd be a lot easier to just look at the sample down and say, Well, clearly this is 14, so you're fine.

I mean, you need to look into this further. Whereas it's not that in reality, reality, I mean, your normal fungal ecology where you're at right now versus where I'm at are going to look different.

And if you were to switch to the data, one of our places might make it look like there's a mold problem in the other person's home, only to find out, Nope, that's normal for that in that individual home and climate and all of that.

So it's all that to say when you get to the sample data, what you're really doing is you're saying, what questions are we still trying to answer that the visual historic evidence can't I don't need you to spend thousands of dollars and sampling.

If you have an obvious problem in your crawlspace underneath your home with mold growing on the floor on the choices and then that sort of thing, if there's a legal issue, go ahead.

Would you just say, okay, there's enough visible here, like, you know, looking in the air conditioning? Yeah. That there's been a slow leak beneath the sink.

Like this is just and some of those things. Is it just enough to say there's no there is no way. There's not mold here, and we should just treat it as mold regardless of testing.

Yeah, let's go there. So we'll use the example of the HVAC system. First of all. So most of us in the U. S. have a heating and air conditioning system to cool the air in the summertime, like where I live in Tucson, Arizona.

And inside of that unit is a thing called an evaporator oil. This is the part that cools the air where the air goes through, and in the process of cooling, it does oftentimes will remove moisture to the point where that moisture will condense.

It'll come into liquid form and drain out of the system as designed. So far, so good. But a lot of times those areas that evaporator coil, housing that surrounds it experiences so much moisture and there's so many available.

Remember, mold spores are viable. They're everywhere. We're breathing them. And right now that's called normal fungal ecology. Well, those are still in the air as well.

They can grow in those systems. So the ants point, if we go into a system and we see obvious growth as a professional, it really does boil down to confidence and assumption.

Is it reasonable to conclude that this is microbial growth or do we have a patient, a client that's looking at this and going, you know, I really want to document this because it's a lot of money to clean this and we can do a sample.

The good news this is it doesn't cost a second mortgage to do a quick sample on something to the operator oil. But yes, if it's a what we call a flat tire obvious problem, we're probably going to recommend cleaning.

There are times where sampling can be very beneficial beyond legal comparing baseline doctors should be had some sampling done and we're trying to see if we can find some data in the home that would support the clinical biomarkers that she's using to show exposure.

But for the most part, we don't. We don't. To your point about the kitchen sink leak. Yeah, we have. I've had times where we've looked at the bottom shelf underneath the kitchen sink cabinet and it's warped.

It's it's laminated, warped because of a slow ongoing leak. Now, in that particular situation that I'm thinking about, there wasn't obvious mold visible on the surface, but the the lamp, the the warping and the I guess you might say the breakdown of the structural integrity of the material was so severe that I know as a professional the likelihood that you're going to have microbial growth underneath that area, underneath that bottom shelf is almost guaranteed.

And to go through the approach of saying, well, we could test it, but what if it comes back negative? Am I still going to say, oh, well, it came back negative, so leave that piece of automation bottom.

Oh, my God. Oh, and thank you. Because that's it. That's the elephant in the room is is where do we sit down with the client and say this particular sample, there might be some value.

Maybe it's because the spouse is sitting behind the other one and going, I'm not touching it unless there's and and so it's like, fine, I'll do some sample and hopefully we get lucky.

But just so you know, we're not closing our eyes and just sampling for the sake of it. It has to make sense. So yeah, and even the EPA website says that if you get a negative test, you can't assume that there's not mold there.

There's arguments on both sides, and that is one good argument. That's right. It's never it's never good enough. The test is never good enough to absolutely prove that there's not we can get into reasons why and that.

Right. But yeah. And you brought up another thing. There's so many places to go on this. Like it is really stressful for families, for couples to navigate this testing process.

Right. It's it's it is such a there's such an art to this with each inspector in each home and each family to really get to the best answers. But the worst thing is to miss it or to make a conclusion.

Understanding reports and sampling strategy

And I've seen this time and time again where an inspector saw something warped, saw the the wood around the window, you know, showing signs of having moisture and based or dirt in there, you know, they'll call it dirt in the air.

Oh, they said it was dry. So it's not a problem. It's dry. It's not a problem. And so in the so the conclusions that the professionals are making are so misleading.

This goes back to and let me just do this real quick and then we'll go right back to the sampling piece, which is to the first topic of what to look for as if you have I made a reference earlier about an inspector that comes out to your building and uses an infrared camera, which is looking not for moisture or molds, looking for thermal anomalies, changes in temperature, and they use that as a tool to help, then confirm if there's a moisture problem, because a lot of times if something has moisture on it, it's wet like drywall, it'll be cooler and it will show cooler on the infrared camera.

So it's pretty cool. Tool You then can verify it with and this is not a moisture meter, but then if you had a handheld moisture meter, you could put it up against the wall and go, yep, that's moisture versus something that's not moisture related.

Here's the problem with everything I've said. There are inspectors that will go out to your building and say, well, I don't see any moisture, you're fine.

Yeah, but I had a leak here. Yeah, they say, but it's dry. That's a big no no. Let me be clear about one thing and this is I don't know that it's a hot debate any more.

I think maybe ten or 15 years ago it was. Which is we don't care whether the mold is alive or dead growing or not. If you have a mold source in the home that happened from, say, five years ago, there was a leak, but maybe you repaired the leak and it's not leaking anymore.

But they left the mold in the wall cavity. Darn it. We are still concerned about that as a potential source of exposure because of the inflammatory concerns that a vast majority of clinicians have and that inflammatory concern is felt to exist where that mold is alive or dead.

So so if your if you start talking with an inspector and they're all about like, oh, if it's wet or it's only a problem, if it's if it's growing, that's probably the biggest red flag to not use them, because it's probably probably a good chance they're not going to find an active wet issue, not leave it to me to say that and you listeners out there will find a bunch of wet issues.

But historically, in my experience, we aren't finding active leaks in homes. It's issues that have happened in the past that have either been corrected intentionally, meaning somebody repaired the roof leak but they didn't remove the mold, or it was an issue of like a leak in a plumbing line that oxidized on top of itself and temporarily fixed itself.

But that's it could happen again. So let's not intermittent like when I had my first run in with mold, there was a flashing on the chimney that when the wind, the rain and wind would blow a certain way, then it leak.

But it was perfect enough, you know, is inside the wall cavity where it was just running down. And it would never unless the timing was just right, it would have never been picked up with the moisture.

Meter, infrared camera. To your point, that's very common. It would feed the mold, move it a little further and then. Go dormant and this and that and then maybe that.

Yeah. With the way the building biology works, the the desiccated mycotoxins from that mom that come into the house and come into the air and we breathe it in.

And that's what's making us sick. It doesn't have to be the actual mold cycle of growth. So I'm so glad that you have really emphasized this. Right? Yeah.

And perhaps going back to the sampling thing, like you said, it can be very stressful and maybe I can pull a layer of the onion here. There are as many audience members, I'm guessing.

No at this point. Different types of mold samples out there for example, there are your samples. You sample the air for spores, fragments, mycotoxins.

Those are the big ones. You can use a petri dish to grow the mold. See what my. Back to the square trap again, just to say a little bit more about what that looks like.

And so that sure. So that people really recognize what we're talking about. Yeah, that's a good point. Do when they're doing putting up the sport trap.

Spore trap sampling by the way, is probably used by not I, I would say 95 to 99% of inspectors out there. And that's not bragging rights. It's considered to be kind of a I don't want to use the word golden standard as golden ply.

That's a good thing. But it is a thing that's commonly used because what it is, is it's a cassette about the size of a silver dollar, but a lot wider.

It's about as about an inch, a little bit more than an inch thick. So, you know, it's it's cylindrical in this shape and it goes on a pump or a tube hooks underneath it and it sucks air through it.

There's different there are different sorts of spore traps that can sample different rates or mouths or volumes of air. But the inherent design is the same.

It traps the spore in the cassette, hence the term spore trap, which then is sent off to a laboratory where they pull apart the slide and there is typically a sticky adhesive slide is a plastic that they look at stick under a microscope, and they simply start counting the spores.

So that is what a spore trap sample is. It's pretty limited information. Well, you're cueing me up. Yes. So one of the what one of the issues with spore traps, I want to be clear because I, I, I know and knows this about me, but I'm I'm involved in a lot of the different camps out there.

So I get the pulse of the arguments. And I fortunately, I know how to play nice in the playground. So I get along with a lot of people. What I can tell you is I don't think that's all traps are worthless.

I think a sport trap samples are worth less. And I think that having that gap between the words is important because I have seen situations where rarely albeit, but spore traps can pick up high exposure issues or they're great for certain things like wall cavity sampling, which is not sampling in the living spaces, but like say, a cavity in the wall.

So you put the sport trap into the wall like. Or you drill a tube that then is put to the spore trap and then it goes into the wall and it takes that sample.

But back to your main point is that in a vast majority of cases, these four trap samples are somewhere between a five and a ten minute sample. Let me just let me just use some basic visual interpretations for everybody so they can understand it.

It's a grab sample. It's a moment of time on average spore trap. And again, for those professionals listening, I'm well aware of that. There's different sample flow rates and all that.

But even of a sample that samples at 15 liters per minute, which is the upper limit of the amount of air that these spore traps will typically collect.

If you do a five minute sample, that's about 2.65 cubic feet, the picture cubic foot X for that, and then just do two by two to point. Just say two and a half for easy math.

And that's and if you did it with times like a ten minute sample that's about five cubic feet, it's it's not a lot when you stop and you go I got a lot more than that just in this room, let alone my house.

The other issue is, is that you might have heard me just say a second ago, a cubic foot or 2.65 cubic feet. That's that's assuming perfect mixing. It's not sampling all this.

The spores aren't getting in line like we did at Legoland the other day with our kids and all taking our turn to go through the spore trap and be sampled.

There's going to be the only spores that will be captured within that spore trap is whatever it was ever in the capture zone. In other words, if this this is the spore trap.

This finger is a spore. If it's not close enough, it's not going to get sucked into that and get trapped on there. It will just bypass it. And I could just walk by my pump and I might push that spore away or into it.

So it's very two ends point. It's very limited. And more times than not, and I would say cleanly across the board, what ends up happening is we get false negatives.

We get this issue where it's not that you can't have a house that doesn't have a problem, but when you have an issue of like, say, suspect exposure, where wherever that came from, whether it's visual evidence, whether it's working with your doctor and they're doing markers on you that indicate environmental exposure, we'll see spore traps being done.

Typically just one or two in the house, like the master bedroom in the living room, an outdoor control sample, and nine times out of ten, if not more, they will come back and they will say, we don't see a problem.

You're fine. And therein lies that huge issue with the limits of spore trap sampling. So and especially for some of the molds that don't send out very many spores.

Right? They send out more mycotoxins and spores or they're really heavy and it's not close to the pump. It's just not going to pick them up. Right. You you you dabble with heavier spores.

There's classic arguments like Stack Buttress and Etonian, where you don't normally see those in the air, at least not picked up by these devices. So it presents a challenge in that.

And not to mention the fact that spore trap sampling itself can also have issues of bypass where it's really small spores go right past that. They literally go around the slide. So so I think the summary is and I think the consensus holistically by many professionals that I work with is that we what we don't use for trap sampling as a in means to say that we think that this home reflects and hears a term that the audience needs to know about normal fungal ecology, normal background levels from the outside.

There's no such thing as mold free. You have to find a bubble on Mars if you want that. To be clear, what we're. Talking might be some other fungus or.

Right, I mean, some moisture being determined. So that's perfect. Out of bacteria at least to your point. But people understand. And when we say normal fungal ecology, we're not saying it's okay to have more growing in your wall cavities underneath your crawl space.

We just mean normal background levels of more than mycotoxins from the outside. And I think that there lies another issue and which is the interpretation of samples, not only in the case of spore chips, are they limited, but you'll have people that say, well, you don't have your your your total spore counts inside of your home are less than the total spore counts outside.

And you're like, Yeah, but the indicator molds inside the home are elevated compared to the control sample. What about that? So it just goes back to that interview question that you asked about in the very beginning.

So the summary on spore traps. Let me see if I wouldn't use them. Exactly. But if you do happen to have a spore trap result and it's negative, you have to toss it out.

If it's positive, that might be helpful. Yeah. And please understand that. What? And of spending the time and money on it. That's the issue, right? I'm not I know what an and I are doing is broad stroking the masses.

There's always going to be situations where spore trap samples may have used. I have colleagues that I have a high level of respect for that will sometimes combine spore traps with other sample methodologies that we haven't even got into yet.

And I do think they can be complementary because it does help address other concerns like air versus surface and that sort of thing. But, you know, we you can't just say if it comes back negative, I'm fine.

I don't want to make a mountain out of a molehill. If your road to recovery is great and you're doing a great job with your clinician and you're getting better, I don't need to upset the apple cart.

But if you're plateauing, if you're not improving at the rate you should be or if you're getting worse, we don't want many eggs at all in a spore trap.

We want to go we want to dive deeper and deeper. Okay. So then you were started when I had you come back to this. We're trapped. You're talking about plates, pros and cons.

The plates. Great for helping identify a It's hard not to go into the weeds with you and I. Problem. I'm not going to on this one. Great. Yeah. Yeah. It's good for looking for recent growth.

Spore traps and petri dish testing

There's an argument to be made that if it's actively growing in the house or somewhere in the House, that it would be viable. And if it's viable, it means that it's able to grow on an appropriate auger, which is this petri dish with a certain auger in it.

I think the other benefit of petri dish samples are they're affordable, as we know, and we haven't talked about it yet. There are other sample options out there that offer, in my opinion, more benefits.

But they're more expensive. And sometimes if we're trying to dip Bartos in the water and with assessing a home, knowing that we might do more, but we just kind of want to get that the train moving to investigate it, there is the potential to say, Well, why don't we do five or six or seven or eight petri dish samples with professional guidance to see if we can find any hotspots again, like spore trap sampling.

However, it has limitations and we wouldn't conclude at all that everything's just fine all of a sudden because you didn't have Starkey Badgers or some other mold grow on a petri dish for a number of reasons, which I'm happy to get into with you.

Let's move on to what we really think works better. Let's go. Let's go on to Q I think you're going to go into Q PCR, but where are you going next? We all Yes, but I'll, I'll, I'll, I'll give a no, I don't even know the disclaimer.

I want to say something to the audience. There is no one gold standard on any of the more forensic type of sampling, including Uma MQ, PCR, mold specific polymerase chain reaction samples out there.

I have found in my career that like any tool, if you do it enough times, you can get pretty good at it. I think there are some limitations. Like I've taken tens of thousands of spore trap samples and I still think it's limited, even though I really know how to do a good job taking those samples.

In the past. But I will take my time. But are you saying that even though you're very experienced at taking these samples, that sometimes you don't don't have that accurate results, sometimes you must miss it like.

That's right. And that's that's what we enter your point. That's why we brought up the limitations of this workshop samples if I need it, if I need a butcher's knife to cut a piece of meat and I grab a butter knife, I don't have the right tool for the job.

And as for trap samples, that butter knife, it's not going to get it done. And that's the issue. And I think we've all

learned I mean, the things that I'm sharing with the audience today are a lot of it.

It's going to be at the School of Hard Knocks is you've learned through experience, not necessarily because I had the best mentor telling me everything, although I did have a couple of great mentors.

I still do, but with messed up PCR. So this is a different thing. This is not spore trap. Looking under a microscope is countless spores. It's not growing spores or mold on a petri dish to see what's viable.

Think about mycotoxins don't grow on a petri dish. Non-viable molds don't grow on a petri dish. The other thing that it doesn't grow on a petri dish, which is what makes you PCR, is good at doing or mold fragments.

And so this is a huge thing if it's new to you. So specially important for what we're talking about, we feel like 95% of those problems are where there's been an old water leak or and detected water leak that's now somehow desiccated.

Yeah, and that's the word. So I'll give a 45 second thing here. So mold organic to Anne's point. And over time it breaks down just like us. And so if you do have growth, eventually it does its thing.

It's spoilage. That's the that's the molds ability to try and survive. But these things break down over time and fragment on average. If you look at the studies online, we have plenty available.

You can go to IEP Radio.com and see those studies. There's anywhere between 300 and a thousand fragments per spore. There's way more fragments in a given environment than there are spores.

And it makes sense because they break down. Well, that's cool to know that the problem is, is that we've got some sample methods that missed that. And if we think or assume or have science or data to justify or suggest that this is an X, also an exposure concerns, which we do, then you would want to find to kind of learn more about those fragments.

Well, spore trap samples don't identify those fragments. Not the fragments that we're talking about. We're not talking about hateful fragments or a petri dish fragment will not grow.

It needs to have a nuclear compartment, which is the part that actually allows the mold to germinate. And if it's a fragment, it's busted apart, it's missing those pieces and it won't grow.

And in theory, certainly in practice. But miscue PCR is DNA based, so a lot of people know MQ PCR as hermie samples. Oh, it's that four letter word that I said.

And Ermey is a dust sample. It is not an air sample. The there's the episode that I do with well known colleague John Banta on IEP Radio, where we dive into the history of Ermey.

So I won't necessarily go into it here. But just to say one of the things I love about this sample that things that settle on the surface give us a history of what has happened over time.

If I have a month, I'm going to use raw, easy examples. If I have a month versus dust buildup in my house on elevated services, that would suggest that I have a month worth of data or history of things that have what were in the and they've settled out.

When you take a look of that data and you're able to identify the fragments, that is to say there's way more fragments in there are spores, you're going to get a better picture of the total biomass available.

You're going to have a better picture of what's totally there from a particulate spore fragment perspective. The other thing about this particular samples that it speaks, don't worry, the limitations are coming up in just a hot second.

But if it species, it's the mold. It gives us a better fingerprint. For example classic example, too, happens all the

time. And you're probably familiar with this spore trap sampling.

It will come back on the report and it will say Aspergillus slash Penicillium, but it won't tell you a species. In fact, that grouping of Aspergillus and Penicillium represents thousands of species.

Well, if someone took an outdoor sample and it had, let's call it Aspergillus a outside and it wasn't high quantity, but you had Aspergillus growing in your home, that's a different species.

You wouldn't know that with spore trap sample because it all looks the same and they might just say, Oh well, it's higher than outside. It's more the resolution, it's a better fingerprint of what's going on.

You might ask at this point, if you're holding on, well, why wouldn't everybody do this type of sampling? There's just a few arguments against it. One of arguments is that it's expensive.

An average spore. Trap. When you say expensive, let's suck cost. Yeah, that's. Yeah. Yeah. So between the different cost. Yeah. So spore trap sampling, for example, again, it varies on the and what they try to charge you and that's a separate topic we can get into if we have time and is about $100 where as a Ermey sample this panel of 36 or you might just say MQ PCR to get away from that is about 250 to 300 per sample.

Now technically that's for trap samples, probably costing your inspector somewhere between 20 and $40 a sample, but they're going to mark it up for supplies and their time and a little bit of time and that sort of thing.

But as you can see, even if I was even if I did say $50 versus 300, that's six times more expensive and that's a lot. If you start thinking about sampling your house, this is a relative conversation to other bigger topics like you not getting better and what's the cost of that and blah, blah, blah.

But that's a lot of money. If you're sampling three or four or five, six samples in your home and not especially if you don't really know how to interpret it.

So cost has been an argument against its use. I don't agree with that particular argument, although I have worked with people that don't have the money.

Yeah, for sure. Yeah. It's a really interesting ethical conversation. Like the. Yeah. Right. We're not going to force it down your throat if you can't do it, but look at other options.

You ever see. And I was going to come back to this, but I think it's relevant now some cost saving things like do you ever do the. And I'm just going to summarize the PCR. Yeah.

So do you ever do the PCR test where you just get a whole house kind of thing and get a full house assessment first and then because some sometimes people don't know is the mold coming from my work, is it coming from my car or is it coming from my parent's house?

Because I'm going visiting all the time. They you know, so to just even help them know which place it is that the mycotoxins are coming from, do you what do you think about the whole house swipe just to even evaluate and then if it's positive, come back and do individual rooms and places.

Yeah, that has been. And tactic to use to help people as well. Can we dip autos in the water and do a whole house sample? Obviously there's limitations but that if it comes back elevated, you really don't know how to narrow it down, but maybe it wakes up the individual in their lives.

The challenge of is that the best tool? Could you do that? Could you get away with seven or eight eight petri dishes for the price of one early sample to help at least try to narrow it down?

So it really does depend on the situation. I come from experience. I mean, I'm published with the EPA on Fermi samples, makeup, PCR. I'm heavily involved.

I'm one of the IEPs that are well known to be a pro for makeup, PCR sampling, but I believe it's forensic because at the end of the day I had a colleague ask me not too horribly long ago, what's the how do you validate that test?

And I go validation is when we find the problem with it. In other words, when we when we sample your master bedroom that was missed by everybody else, that there was no issue.

And then we find evidence forensically of a source and then we we do get more aggressive and we try to locate it. There's different techniques to find it.

Yeah. Yeah. And then that's yeah, that's the justification. Once you've found the presence. Right. Exactly. So I think my PCR and short is a is a wonderful tool.

It's not, you're not licking the ground, you're not snorting the surfaces. Some people bring this up to you when you sample the surfaces and it's like we understand that.

The whole point is that it represents when you have enough data you can extrapolate that to exposure and you can also and that's more of a clinical discussion.

But from an environmental standpoint, we can compare that with thousands of data points to say no, this is not normal in your area. In fact, one thing and that I'll just really throw at you is when we are working with clients, if I'm doing the work, fine, that's one thing.

But I do a lot of virtual where I help guide people. We'll have them do an outdoor control sample because your fungal ecology is so diverse that you might have a mold species present that to a layperson like, Oh my gosh, it's it's on the water damage building category of this, this Burmese sample right.

But it turns out it's a very common outdoor mold. California's a classic example where there's a couple of molds that are on the water damage category, lists that are very common outside.

And we don't we don't want your patients to be chasing their tails thinking they have an indoor problem. If there's a lot of strong evidence to suggest it's coming from the outside.

qPCR, fragments, and mycotoxin testing

Yeah, and definitely for central Texas, that's an issue. So then you go and you might have to add in the mycotoxin testing. Right? Mycotoxins sampling.

And when we talk about that, I know it's gotten a lot of like anything including but PCR has gotten a lot of debate on both ends of the aisle doing dust samples, if that's what we're talking about for Mycotoxins has been something that I've kind of been on the fence I've held off on, but I'll explain my rationale why the first thing I'll say is because I haven't done thousands of them.

The second reason is because I have tried to reach out to the labs to get a better explanation of what they're calling Amber. Earlier, when I said you shouldn't leave the lab to tell you the interpretation, Right.

Well, that still holds here. But there is an element of curiosity of like, can you explain why you're saying that this is an elevated amount? Like, where's your data coming from?

So we can learn more as IEP is to better do your client's service in the field. And unfortunately, we haven't gotten a really good response, if any, from those organizations.

Which leads me to my final point that years ago when our late Dr. Jack Bradshaw, who is a well-known person in our industry, passed away, I was working with him loosely on doing Mycotoxins sampling outside and not just the dust sample, but we were doing don't worries.

I have good news for for Mycotoxins to bear with me. I was actually doing air samples as well. The problem was, is that I don't think we had the ability to capture the mycotoxins that may have very well been present with the technologies we were using or.

Getting the toxins out of the whites so that they actually showed up in the test, Right? Yeah, if, if it comes back negative. So that was an issue. The other the other issue again is, is we just need more data.

What's normal? Because what really bothers me and is when I have used just for the record, I have used mycotoxins samples before. I've had situations where the clinician chose to use urine mycotoxins analysis to look for trending of what they're calling improvement with binder bio toxin, getting rid of all the stuff and seeing how they're doing over time.

And when this particular patient, there's been a few have had spikes. We've tried to say, well, let's just out of curiosity, see what one of these dust samples will come back showing and if there's any sort of potential correlation.

In my experience, that actually has worked once or twice. But I'm far more forensic, far more surgical, if you will, with makeup PCR, because there's an argument to be made that if you have a big mold problem in your house that's producing high counts and high concentrations of mycotoxins to the point where it's affecting you, there's a theory here that you should be able to pick up on the particulates.

The breakdown of fragments in that thing is that sort of thing as well. Agreed. Agreed. It is interesting to, you know, to start to use this tool alongside and see how things correlate, though, because I do think that, you know, some of these molds are more tricky to pick up the spores for and that the mycotoxin test might be a better.

Long as as long as there's. Yeah. Is agreed. Not really sure if that's always necessary unless there is kind of a puzzle that's to figure out because really what we want to do is identify the rooms and the places in the building that we want to potentially consider tearing apart to find the problem.

Right? That's the bigger question of what is the value of the sample and what can we do with the answer? My issue with a lot of the sampling and not just on mycotoxins or spore traps, but more also to do with the excessiveness of it all, which maybe we have time to get into, but is that people are IEPs are out there taking these samples, but they don't really know how to interpret and they're letting the lab do the interpretation, saying that we've found mycotoxins and as a result, there's any level of remedial or cleaning measure being recommended for thousands upon thousands of dollars.

And from an ethical perspective, I have a real, real problem with doing that because I feel like it can be very misleading. Not to mention the I'll let you patch this how you need to, but the limbic system potential issues that coming up that cause traumatic responses where people are going to start treating mold like plutonium because we're acting like it's plutonium when we're taking these levels that we don't really understand.

And not everybody does this. By the way, I don't want to give the right by the audience. To put it in the context with all but all the tests. Yeah. But what you're you're on something really important because I think when when these results are reviewed with a you know, affected person, it's really important to to get to the root of, you know, where the you know why the PCR is positive or why the mycotoxins positive.

So I would love to hear because this is where they're really I think the art of what you do comes through is what say you've, you've got this bathroom that looks pristine, but you come back with a pretty significant PCR test.

How do you think about it? Like what do you what do you do next for the detective part of the job? Yeah, I think and let me just end on a good note for the previous topic.

If at the end of the day, it just boils down to if you as a professional are able to look at any set of data points and know and use that legitimately to help answer a question like I think there's a source, maybe even narrow it down in the house, like I think it's in the basement or the side of the house versus the site.

That's great and use as long as there's value and that the value doesn't see the cost of ripping the house apart. And I joke a little bit on that, but in your.

Example, I mean that really just like if you think about you're kind of the house, the building doctor, right? The way that I think about running tests on my patients is like once I run the tests, what am I going to do with it?

Is it going to change? What I do is are going to help me figure things out or not. And so I think that's the same thing for you, right? Like, what are the tests that I really need to figure this building out?

Well, and that's what and that's where in lies part of the challenges, because you have different experts in the field that do have different experiences.

Now, let's just rule out the people that I are either basing things off of breed or a fear mongering. Let's just let's assume that the people that I'm talking about right now mean well, okay, So those individuals, right.

Those individuals, they might have experience using Mycotoxins McHugh, PCR No, I do with that one and other source. Even particle counters literally just a particle.

Can't even tell you if it's a mold spores or a dust particle that can help us narrow down where there might be a source that won't tell you what's the south wall in the bedroom or in that shower bathroom that you just mentioned.

But to your question, normally, whatever the tool is and I find that messed up PCR has been the one that's most proven out successfully, is that you still got to try to find it Like it's not it's not like, oh, it's coming from the south wall in the shower.

Normally what we start end up doing then is looking at there's non-intrusive and there's semi intrusive options. So if we used your bathroom as an example, there's an evidence that there's a source there.

Whatever the metric was messed up. I'll pick on that one. We're still going to look in there, right? We've we've at that point, we probably already did a visual assessment.

And if there's nothing to say, there's nothing there. There's nothing that would help. Look, because because that's really where the where the tough ones are.

And I think really what makes an individual inspector stand above the others is when they figure out those really tough problems. This is where the term building science starts to get its be its worth and weight in gold because you might as an IEP.

Then look at this bathrooms. I want to visualize myself in this bathroom with you all right now. And I'm like, I don't there's nothing here. Like, there's no swelling, no paint drooping, no mold growing on the ceiling, no no damage on the vanity bottom shelf.

What am I to do? You've done the infrared cameras, you've done the moisture meters. Nothing's coming back positive. Start looking at the makeup of the building.

Let's start seeing where there's all plumbing walls out. Okay, This walls are plumbing. Walls got plumbing. It's got supply line, It's got waist lines like your sewage.

These are potential candidates at the shower wall. When on the shower wall that we know how it's built. Wealth composite. No, it's tiled grout line. Well, was if it was installed correctly, then does it mean you have a mold problem behind it?

But can we sample it like with wall cavity samples on the backside of the wall? I don't want have to drill a wall a hole through your tile shower if I can get through it.

From the back wall of you. Thank you. You're welcome. But then the other thing I'm thinking about is what about relationship in terms of type of framing?

If it's an older home balloon framing, it doesn't have communication from something that I'm not thinking about. Like, I'll be darned. I didn't realize this, but the bathroom was was the original construction and there was a crawlspace underneath that that had a mold problem.

And there's a bunch of opening gaps, cracks, plumbing holes, electrical holes that were not sealed off that allow this mold to come into. Turns out it wasn't your shower.

Turns out it was coming from that. Or flip the script and say, not the crawlspace beneath it, but the attic up above it, because there was a major mold problem up in there for any number of reasons which we can get into if we need to.

And the mold coming down through your can lights that are not hermetically sealed and allowing it to come in mold mycotoxins and expose you that way. So understanding the building, understanding where well, how does how do part particles migrate?

Well, there's there's driving forces and there's pathways, there's openings and gaps and cracks. And a lot of people have a hard time with that. They're like, Mike, this mold spores go through a wall.

Now let's just clear the record. Mold spores does not go through a piece of drywall or past a plaster. However, there's a gap at the bottom of that drywall where there's baseboard.

And a lot of times that intersection is not hermetically sealed or there's the electrical outlet that's about a foot off the wall, off the floor. And it's not hermetically sealed.

Or they're like the electrical outlet switches or the wall that you had a bunch of pictures that you hung up on the wall. And there's these holes that seem small to all of us.

But when you think about the fact that an average mold spore is about five microns, not to mention those tiny fragments that Anthony I get all excited about talking about, And you think about the fact that about 250 of those five micron spores can fit on the top of a needle.

Pinhead You start to realize that this stuff is really small and can easily get into my environment if there is a driving force and driving force. Not complicated.

It's things like temperature differential. If it's hot in your attic and it's cool in your home, the air is going to want to come into your home. If it's more moist in the attic and less attic in your bathroom, that's going to drive it that way.

If you have an exhaust fan, oh, there's a ringer in the bathroom and you turn it on. I think it's a great idea for removing moisture, but you might be pulling things into that bathroom.

Just a couple classic examples. Okay. This is beautiful, Mike. So I think this should be the question that people ask the inspector before they hire them.

What if you get a positive test in X, y, z room and everything looks pristine? What are you going to do about it? Because, you. Know. You gave such a great answer that was so awesome.

You know, to your point, and I'm really glad you said that and I mean it because what I'm finding is that just a real quick thing. I know I mentioned that we have a resource in IEP Radio.

The International Society for Environmentally Acquired Illness has a document on their resources page of finding a IEP. So there's there's growing resources, even Sears, X, C, IRS, XCOM has free video, There's there's a bunch of stuff out there.

But at the end of the day, those are great tools to help get that inspector's foot in the door. It's these real life questions. It's the sample report, it's what would you do in a scenario where there's no obvious evidence of a source in the room, but your results, maybe your sample came back elevated.

How would you how would you react to that? How would you rule in or rule it out? And if and if how they would rule it out, help and in myself a little bit would say, well, if we don't see anything, we're done.

We're just going to say it's probably because your dog, then that's probably not. But you're. Not kidding. People do. That. Yeah, doctors actually do that. Yeah.

Which is the issue, right? This is what we hear all the time. And it's like, listen, it might be your damn dog, but I got. I got an idea. How about we be a little bit more scientific about it? First?

How about we rule that if you order. In enough report, it is not the dog? Yeah. Yeah. So? So. No. And nor do you need to be shaving it or dipping it in ammonia.

By the way, separate topic. So. So the point the point I'm making is to Ann's point is she's right. Like asking these real life questions of what would you do in this scenario might damn well be more important than the quality of flashlight or infrared camera.

They have that's going to be in your house. And to me, it's the degree of curiosity like. Oh, yes. Really curious about your house. Are they curious about you like that yet goes such a long way in these whole hidden mold problems is just.

Just an a quick tip a quick tip to the audience, too, is and I have a lot of clients ask me this at the end of the day. So it's kind of it's something I want to share with you as a lot of times it just boils down to IEPs.

There are a lot of them. I think more than not mean well, but they are so used to go, go, go or a flat fee that they're not feeling like they can take their time.

And I've had a couple of people turn around where all you've said to them is saying, Hey, I just want you to know you're the client telling. This to the IEP that I want to pay you for your time, that you're worth it, and I don't want you to feel rushed.

And so if there's an hourly rate, I'd like to know what it is like to talk to you about that. And because just to give everybody an indication, an average 2000 square foot home that doesn't have a crawlspace or a complicated attic, meaning hard to get through, hard to navigate that take you two and a half to 4 hours to investigate and that's it.

There's not a lot to look at. In that involves pulling out the refrigerator, the dishwasher, all those things to make sure there's not a slow leak happening.

And yeah, taking the trunk. Yeah, even the sampling. Once you sit down and figure that out. And do we have 5 minutes to talk about. You know, we're I'm, this is great.

I'm enjoying this so much and I think so important. But if you've got time, I've got time. Okay. Very good. Yeah, absolutely. I want to bring something up and and I know we talked a little bit off line about it, so by all means, you know, steer me in the way that you think the audience would best receive this.

Finding hidden sources in buildings

But I want to talk about this issue about, I don't know, have any better way to say it than to little sampling versus too much sampling. Yes. So here's what I'll say.

Back in the good old days like issue used to be, there wasn't enough sampling. The classic. I took a square trap sample in your living room. I took one in your master, one outside, which is highly statistically insignificant, and I

didn't find a problem.

You're fine. So that's too little. Many people agree across the board in many camps that that is true, that that's not enough to to test the home. What we're seeing today and I want to I want to qualify this so that the audience knows where I'm coming from.

This is my opinion. I know I share this opinion with many other colleagues by the way. But I will tell you, I get this first and foremost from the clients that reach out to me to review what I'm reports from inspectors.

And I'm about to tell you not the inspectors. But the process, this idea is oversampling. I want to remind the audience that when you walk into a hospital to see your or if you go see and Shippy, she's not going to say, let's sample everything under the sun.

Sell your home, sell your cars, and let's spend hundred, two or $300,000 and sampling hospitals don't do that. There needs to be some money left for getting well and for remediation.

Yeah, and on top of that, there needs to be this thought of saying, What questions can I answer with this? And do I really believe in what I'm selling you?

And here's what I mean. There are a growing number of companies that I see often, How do I wear this? The the the inspectors either explain it or perhaps for more of various nature reasons, they will have the client do a multiple array samples for mold and or mycotoxins, like these panels of tests with the narrative that each one of them are inherently limited and that we might miss something if we don't do all of them.

And so let me just tell you what ends up happening. In my experience, a majority of the time. In a majority of the time, what I see from reviewing is not reviewed.

Hundreds of these situations now is that the client will be, first of all, the sample cost will they'll be charged two or more times in the actual fees.

So if you if you know and this is easy information, this you can find this online at an average early sample cost $250. I've seen the invoice come back from some companies where it's over $500, sometimes closer to 600.

So there they're charging an excessive markup for just those samples. And that adds up to a. Really important question, just a direct question to inspection inspectors.

How do you. Charge. Markup your tests or. Yeah. You're having a little bit of markup for I have a marginal markup like four. Cents because they have to process the samples.

They have to get the reports back. Quality control samples, how many, how many IEPs are doing their all field blanks and sending them off for your benefit down the road.

But but that's an issue when it adds up to that, that one sample being marked up and then having four or five of them in the home, but it gets better.

Then the other thing that happens and it's like, well, that was for the army. What about the Mycotoxins dust samples the same issue, multiple samples overlapped. And then here's what we often see.

We'll review the report with them and find out that even though a sample came back positive or negative, they still are making the same recommendations.

And so I'll try to broad stroke this. And if you want to dive into any particular topic, we can, but you'll have IEPs that are charging over $10,000 for an assessment of an average sized home, 2000 square feet, plus or minus.

And then when you look at their report, they're making the same recommendations regardless. And you have to

ask this question, It's an elephant. The room is if you're going to make these recommendations, what would have caused you not to make these recommended?

I mean, what what result is a pass is really what you need to ask is. Back to the kitchen or to the bathroom cabinet. Right. If you see there's been water, do you need to sample it or can you just make a recommendation?

Yeah. If you're going to take a sample in the HVAC ductwork and you're going to find mold in there, not mold growth, but settled mold structures in there, that would include spores and fragments but not growth.

The first thing I want to clue everybody in on is to an extent that's normal. Just like you have normal dust buildup, your ductwork doesn't get cleaner over time. It gets dirtier over time.

And if you know that you've okay, makes sense. Mike, then the natural question to ask the inspector is, is what kind of result would you sample in my ductwork?

So you're about to charge me five, $600 for it when you would say, now you don't need to replace your ducts, you don't even really need to clean it if you can't get a good answer on any on what would they do with a pass or a fail a good or a bad sample?

You need to really review whether or not it's worth hiring the company, who's treating it like it, like it's an olive cart. You have to do it all. And I wouldn't have brought this up with you, Anna, except for in the last two or three years.

It's it's getting to the point where I think there are companies that are becoming more aware about the the chronic illness communities. And while there are many people I have met that I think do really great work, some better than me, there are, I think equally unfortunately, there are examples of people like, Hey, this is a great opportunity for me to make a lot of money and, and I, I have if there's anything I'm passionate about, it's people getting taken advantage of in that, right?

Because having dealing with chronic illness myself, it is it does cost a lot of money. And it is it is a very vulnerable period of time. So these sorts of yellow flags are great ways to turn this into a positive, to not have that happen to you when you enter.

To summarize that last ten minute conversation we had in less than 30 seconds is if you're going to do a sample, what is it going to help us answer the first thing?

And there's a value there, right? Is it worth the value of the cost of the sample? And then what is a pass or fail? What kind of an example can you give me where if I sample the duck worker, if I sampled underneath the wall cavity or inside the wall cavity, that you'd say, No, this is fine, let's leave it alone.

Because if it's an automatic, we're going to have you remediate it. We're going to have you clean out your attic and spend tens of thousands of dollars because we found a spot of cloud for a mold growth on your member and your vented attic.

That's a problem. And it's happening more so just land my airplane with the audience to say that not everyone's like that. There's a lot of great resources out there, but there is a growing concern for that and there's no reason why you can't get an excellent assessment of your home for a much more reasonable price than the numbers we're talking about.

Okay. So let's give us give us a ballpark figure. Where do you think people should be expecting? Right. Right. A lot a lot of what is a lot of work over years.

But yeah, yeah. Yeah. 2500 square foot house and the person is pretty sick and doesn't want to miss anything. Like what's the range. If you do any sort of forensic sampling like MQ PCR, by the way, we said this a few times and we haven't said and we said.

Ermey Just to be clear, I'm not a fan of the Army score. I don't follow the Army score, which is kind of weird for people. All right. We didn't have time to get to that.

But yeah, yeah, that's so misleading because even, you know, a little bit of she told me I'm a little bit of stocky and yeah. We see normal backgrounds.

Yeah. Actual army score so I just crossed that out. If the Army's run I'd rather just do the most Q PCR without. Yeah. And you have to having the people look at the end of it, the professionals look at the individual species.

I do believe there is a correlation by the way with hurts Me score. We've seen that time and time again. But back to your point, your question, if they're doing that sort of thing, like let's say it's a 2500 square foot home, so let's say that they're doing well.

I'm just going to make up a number for indoor samples for Army's plus an outdoor control sample. Let's say each one of those are $300. So I'm not good at math, but that's 15 right there.

So let's take $15 and just shelve that real quick. And then we have the time for a couple of miscellaneous things or draft samples, maybe a tape left here or there.

Let's let's, let's give $800 for that. Now we're up to 20 $300. We're almost home. And then we're thinking about the inspector's time. Okay, So none of that stuff had any real markup to pay for the inspector.

Well, I'd say the inspectors hourly rate is $200 an hour, and he's at your house for 4 hours. That's $800 out. Now we're at $3100. So somewhere between 28 work, which I was about to say, yeah, you're going to be somewhere between 3100 and say four or $5,000, which would include a report because there's going to be some time built into that that range to accommodate that report rating screen, knowing that it could be a little bit less and it could be a significantly more.

But it would make sense by makes sense if you told me at the last second that your inspector was also a building defect analysis and they were looking at your house for the last two or three days, obviously it's going to be more money than that, but that's something you would talk about with them before you ever signed a dotted line saying you wanted that service.

Right. That's so helpful, Mike and I, I can just your passion for for helping people with this and your level of curiosity at that, you know, really moving this important science forward is really admirable.

I just I feel like we I could I could talk to you for another hour, right? Maybe we will. Certainly. I would. Be calling you back to coming. Part two.

But I want you to say once again, like you have poured so much time and energy into your podcast, the website, it, you know, collaboration.

Costs, red flags, and trusted resources

So anything you want to share with the audience about where to find you and if they really want to understand this and dig deeper, where to go. Sure. Okay. Thank you for that.

Yeah, first and foremost, for education, free education, go visit IEPRadio.com. That's my podcast video cast. You can you can do both. There's not a hundred podcast.

I don't use it for marketing or sales. I mainly just do it when hot topics come up or people push me hard enough and I'll interview somebody or dive into the topic.

So you're going to find that a lot of the fundamentals, including what we talked about today and deeper, are literally in that podcast. In addition to that, there's references.

So a lot of people go, you know, you say this stuff, but where's your science? Like, where's your data? That's a great question. That's why there's a whole references page and you can see where we're pulling this information.

So there's no confusion of where we're getting the information from. My website where I consulting, I do a lot of virtual work and I do at times do field work as well.

It's hard because there's so many people in need. So virtual have been really popular is go to environmentalanalytics.net. It's not a dot com but environmentalanalytics.net and you'll you'll be able to learn more about me and how I can help you if that's interest you.

And then two or three more quick resources that are have nothing little to do with me. Again, I mentioned earlier the International Society for environmentally acquired illness.

I know that's a mouthful. The letters ISEAI.org. If you go there, you're going to find that there's a bunch of resources not just to help find professionals in your area, mold assessors, remediation, but to be honest with you, just really on par with what we talked about, documents like finding the right IEP.

We have a 1 to 1 document that's gotten thousands of use already on remediation. Fact sheets like, say you're getting ready to get into remediation. You don't have time to talk with me. You feeling overwhelmed?

Gosh, if only I had a resource that I could trust. Go to the resources page on that website and you'll see that 101 remediation document. It's I'm very proud of it.

I worked on it with the IEP committee and I think we did a great job. Yeah, Yeah, exactly. You've seen it. And then the last thing and again, I just want to caveat this or disclaim it with this.

Most of us in this field know that our industries sometimes be the different camps can be a bit polarized, whether it's a pride ego thing. Mom and dad didn't love us enough when we were a kid.

You can really get in the way of the community of of of finding consensus, which I believe what Ann's trying to do is to bring us together like so many other people that I'm willing to speak with, and that I have this opportunity to speak in.

And for me, there is a new growing organization that I think people should keep their eye on. They're offering a lot of free information right now, which is CIRSX.

It's not surviving mold, but it's CIRSX CIRSX.com The reason I bring that to your attention is because a lot of environmental and clinical, but I'm talking about the environmental piece right now.

There are a ton hours upon hours of free video conference recorded stuff that you can watch as a person. If you any topic you want to get into, you want to get into inhibitors or what can cause false positive negatives with makeup MSQPCR, you can go that you want to get into best practices for remediation and other topics like that.

It's a free resource, so feel free to visit those in those sites because I believe it's a great way to dip your toe in the water to learn enough and not necessarily be an expert, but to then have a better idea of as an ambassador who are you going to start letting come in your house when you're when you looking for that right Inspector.

And there's not enough Mike Schrantz. There's not enough. John Banters and a whole host of other excellent IEPs out there. Who are you going to use? These resources are a great way to get you there.

Thanks so much, Mike. I just really appreciate you taking the time today to share your heart and your wisdom and your hard knocks, right? Yeah. So it's my experience and it's really, really such a great contribution.

I'm so happy to have had this conversation with you. I think this is a wonderful opportunity. Thank you, Ann. I look forward to the next one.