How To Craft Your Healthiest Home Environment Transcript

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Introduction to Healthy Homes

Welcome to Mold,, Mycotoxins and Chronic Illness Summit. I'm your host, Dr. Ann Shippy. And today we get to explore creating a healthy home with Michael Rubino.

He's an air quality expert and wellness advocate. He's the founder of Home Cleanse and the nonprofit the Change The Air Foundation and the author of The Mold Medic Thanks so much for joining us today.

Hey, thank you so much for having me here. Yeah. Well, let's dig in. I love the positivity of your message. So often when we're in this sick building syndrome or being exposed with mold.

We're just in survival and really not happy with our environment. So, you know, bridging that gap to really having a fully healthy home. So where do you where do you like to start with figuring out where the problems are?

Yeah, I think the the first thing that you have to figure out and how to create a healthy home is figuring out what's unhealthy about it. Right. And that's really where it starts.

It's really interesting because I've been doing this for 11 years now, and obviously the mold remediation and mold inspection industry has been around, you know, for decades.

And when I stepped into this and I started seeing people getting sick and inside their own homes, that was a new thought for me, you know, to really to see that pattern of people getting sick right after Hurricane Sandy.

And what I realized is that we're not really looking at things properly. You know, for example, a lot of these guys will come in on the doors, do an air sample in the center of a room.

Well, that's really typically further away from any where the problems might be. So we're getting a false sense of of understanding of what actually is going on in our homes when we kind of just rely on that that strategy.

So I think really, you really need a good person who's going to come in and identify what's going on and one of the best ways I think people can just answer the elementary question, do I have a problem in my home is probably using PCR technology and testing your dust.

And the reason being is because a lot of us have hidden problems behind walls, behind ceilings, or even in our backs. And if you do an air test in the center of a room, you're not going to pick it up, most likely.

But if you use PCR technology now, you're able to see what's abnormal that even could be behind walls that you can't even see.

Finding Hidden Mold Problems

And so I usually tell people starting there is probably the best place because then you can see what's abnormal and then start bringing in professionals to help you figure out where that stuff might be coming from.

And that's where you really excel, is figuring out how to get to the hidden parts and to get the proper remediation done. Totally. And that's that's just it.

I mean, you know, I Gwyneth Paltrow is a client of mine. I went to her house and place looked immaculate. You would never, ever guess that she had any sort of mold in her home.

Right. But lo and behold, it was underneath her bathtub. It was in her HVAC It was places that, you know, you

typically don't think about, because if it doesn't look like there's a problem, we typically think that our house is perfect.

But unfortunately, you know, we need to use science and data to really interpret if there is or is in a problem in our home. This is such a big deal because I have had patients get take things into their own hands and be like, Oh yeah, I think we had a leak over here in this roof that we just painted over.

So maybe it's there and they just start pulling things apart and then everybody gets sicker. So I'd love for you to give us some guardrails on. All right.

We've got we've got a possible suspicious area or a room. How do you really make sure that everybody is safe in the process? Yeah, I think for people to understand as when you're touching something, especially something like mold or bacteria that has such tiny particles as a part of it, you're going to release those particles when you disturb it.

So, you know, if you have a, you know, a leak behind a wall and you say, Alright, I'll just cut out the wall. Yeah. If you don't do it safely, you're likely to get those particles to aerosolize and you know, 250,000 spores can fit on the head of a pin just to give people some reference here.

So you can release a lot, right, in a very short amount of time in a very small area. So you really want to make sure that you have, you know, proper engineering controls, you know, containment, something that's going to create negative pressure so that those spores are getting trapped in a filter and not going across the house, things of that nature.

So some sometimes it's better to call a professional for some of this stuff because you know, you just want to make sure it's done properly and safely.

Yeah, I mean, the repercussions of not doing it safely are just so profound. I just think unless you actually know how to do it because there's so many nuances to it.

So you said some really important things, the proper engineering. What do you mean by that? Okay, so let's say I'm remediating a bathroom. Okay. We want to actually seal off that bathroom from the rest of the house, and that is that's a secondary line of defense.

So what it does is it actually when you put plastic up at the door or you build it, you know, a little room outside of it, what you're actually doing is you're making that room now smaller.

So there's not going to be any air exchange between the rooms across and this room. Then you're using like an air scrubber or a negative air machine and you're venting it out a nearby window.

And what that's going to do is now that that room is smaller, we now can control that environment, put negative pressure in that space, so that when you do touch the wall, when particles do get into the air, they're actually going into the machine and out the window as opposed to you know, other parts of the home or even your body.

Right. Or just our air conditioning system. Yeah. Pressure changes in the house can just those toxins just get pulled into even the furthest area of the house just because a different air flows on the house. Exactly.

So how did you get to know about all of this with how to do this? Well, I had I had a pretty good head start because my dad's been a restoration contractor since I'm five.

And so I've been around construction my entire life. I think that helped me tremendously get to wrap my head around what exactly is happening and then it was really, you know, like I said, after Hurricane Sandy when, you know, many, many, many homes were water damaged, people started complaining of being sick.

Safe Containment and Engineering Controls

It was kind of the first time that I realized, wow, our environments actually have a pretty amazing effect, both positive and negative, depending on the condition it's in on our health.

And I never really thought that before. And, you know, we've heard of mold. I grew up around mold. In hindsight, I had asthma as a kid. I lived in a moldy apartment in New York.

You know, when I moved out of that apartment, I no longer needed the inhaler and asthma was gone. Right. So, you know, in hindsight, when I look back, yeah, it makes a lot of sense.

But at the time, you know, early 2000 nineties, you just poured bleach on it, you painted over it. It was this, you know, nuisance. Nobody really realized that that the health effects.

And so as I started to really understand this, it has been a lot of trial and error. You know, I have I've been a part of thousands of home projects. I learn new things still every day 11 years later.

But it's it's this this, I guess, determination to figure out what's going on inside of a home. For me, it's exciting. It's it's like a science puzzle that you have to put together.

And, you know, it's really understanding the brevity of this, I think has been such a big passion of mine, because if you look at today and where we're headed in the health care system, 74% of U. S.

adults are on at least one prescription drug. 60% of the global population deals with at least one chronic condition and 40% deals with multiple chronic conditions.

You know, we're actually getting sicker. In fact, we've never been sicker than we are before. And for me, it's like, how could that be? If we have better medicine, better supplements, better, better exercise, better water, better food?

I mean, you can go to Costco and get organic groceries. These days, but we have more access to to better health than ever before, but yet we're not getting healthier.

And so for me, I think that it's because air quality is a missing link. And when you look at the statistics of how damaged our homes are, 50 to 80% of homes having history of water damage, it's a lot.

Right. And so we haven't been thinking about it hasn't been on our radar. And I think once we get there and we start making this a priority, I think we'll start to see how turn for the better.

I'm with you, I it's really when I started really recognizing mold as a problem over 15 years ago, it would be like, oh, I don't really want to go there unless I have to.

Like, let's see what else we could do to get to the root cause. And now it's just it's so important for people to take it. Well, it's just an important piece that really everyone needs to to be looking at.

Okay. So we've got the house has been tested, confirmed that there's mold or a previous water leak, and some of this 50 to 80% of buildings. We found a remediation team that knows what they're doing on how to really do the engineering and containment properly.

What's next? Well, you know, it's you have to look at the data, right? So the data will tell you where the sources are and, you know, a house typically has a few sources, some houses, obviously less than others, some more than others.

But you want to look and prioritize what is creating the most impact to the air quality. And you can tell by the size of the colonization, right? So when you're looking at that testing data, you know, you're looking for stuff that is making the most impact and you're kind of starting from there or working your way down.

Because let's face it, we all don't have money trees in our backyards, maintaining and restoring homes and renovating homes is costly. So we want to take things step by step when when you remove sources.

We also have to think about the HVAC system. I will tell you this. I believe the HPC system is actually how people get sick.

HVAC Systems, Sizing, and Filtration

And the reason I say that is because when you look at data, the data shows that, yes, there's sources across the home, yes, we want to take care of those, but it amplifies in the HVAC system over time.

It just does. I mean, I can show you samples of, you know, we found 50,000 spores per cubic meter on a on a sample inside of a wall cavity. And that same mold is in the millions in the HVAC.

Right. So it just, it just the facts, a wet environment, it grows tremendously in there. And that's when it really starts to create havoc on the air quality.

So it's you want to address the sources and then you want to clean the AC system, the ductwork, the coil. Honestly, in terms of cleaning and replacing the coil, sometimes the cost of those is so close that you're better off replacing it.

And then you want to look at upgrading filtration systems for the HVAC. Because I think one of the biggest problems with the HVAC systems, especially in America, none of us have good filters on them.

We go to, you know, big box stores, we get the cheapest filters we find. We put them in there and they are doing not enough for us for the particles that actually mean something.

You know, the American Lung Association says anything smaller than ten microns poses the greatest human health risk because it bypasses our self defense mechanisms immediately entering our bloodstream.

And what's smaller than ten microns will mold bacteria, viruses, toxins, allergens, you name it. Right. And a lot of these things are not getting trapped or picked up by our HVAC filtration system.

So they're passing through it. They're getting to the evaporator foil, which is a wet environment for it to amplify and now all of a sudden the lungs of our home are severely impacted.

Right? So I think I can't stress enough how important HVAC systems really is to this piece of the puzzle. Yeah, this is such an important area. Having gone through this recently with one of my kids has been his at college and we realized that his this place had pretty severe mold in it and that's why he had a failing.

Well, and so I had somebody come in and do an AC evaluation and they had put a two large and an air conditioning system in. So in central Texas, that's how the air gets to humidified for sure.

Right. And it was three over 300% over capacity. So it was hardly running to to take the moisture out. So maybe you could speak a little bit to that and and and that's probably an important piece to get some type of an evaluation done.

And whether even the right AC system was put in in the first place. Yeah, I see that a lot. I see a lot of improperly sized systems, whether it's too small or too big, it's got to be appropriately sized.

And you do that through load calculations and you hire, you know, an HVAC specialist that does load calculations or a mechanical engineer to evaluate the system.

But it's really important because those load calculations tell us how how big the unit needs to be in accordance with the sized ductwork, with the what we have for the home that we have for that type of installation and windows and

doors that we have, etc..

And what that does is, like you said, it makes sure that the HVAC system is running for the time that it needs to run. Now, if it's too big, it's going to reach the temperature too quickly and then it's going to shut off.

And so it's going to be hardly running, which might sound good from an efficiency standpoint, but unfortunately, like you said in Texas and many parts of the country and certain times of the year, we want that thing running pretty, pretty long because we want it to dehumidifier at the same time.

And so I think when you have that that kind of a problem, yeah, it's going to be an issue. Now on the other side, if it's too small, you're going to have the opposite problem where it's running too long.

It could be, you know, that could develop, it could cause the coil to freeze. You're not going to get the proper temperature that you need. You might have too much temperature differentials create condensation.

So you're going to have problems either either way, which is why it's so important to make sure that it's sized properly. And there is a there's a logit science behind.

How do you size a system accordingly? And that's something that you definitely want to make sure is done. I mean, I've had a couple of clients recently that had unfortunately bought new systems like two years ago.

They were not sized properly or causing issues. They had mold, so they had to re buy a new age vac system of the appropriate size. So that, you know, you want to make sure don't skip that load calculation step.

Worth the investment up front for sure. Yeah. Especially if you're building decks like if you're building a house, I would highly recommend putting in metal decks rather than the fiberglass decks.

Yeah. And because I'm not really sure that the that the usual decks that are used are really actually cleanable if you look at the surface of them other than, you know, if you could put them in there in the laundry or something.

What are your thoughts on cleaning decks or replacing them? Well, depends on the deck that you have, right? So a lot of docks these days in some parts of the country are made out of fiberboard and it's all insulation board.

If those start growing mold, you really can't clean them because it's just made of insulation, it's completely porous and you'd have to replace them one.

That's why I think investing in metal ductwork is probably a better bet and safer bet because you'll be able to clean them, you know, and keep up on maintenance.

Even if you have a good filter, you're probably you probably will need to clean them as often. But you still want to clean them, you know, pretty regularly.

Some develop some sort of cleaning routine. The flexible ducts also don't clean well they're they're all plastic and they're ribbed. And unfortunately, this is just a static electricity that's generated when the air friction moves through the duct.

They causes things to bind to the sidewalls of the plastic. I mean, I've I've firsthand I've tried cleaning them. And you could still see the debris. No matter how much you wipe away.

And so, you know, keeping that in mind, luckily, those are the probably the cheapest to replace if you need to replace them. But you're better off getting something that you can have a company come in, you know, once a year or if you have a really good filter, maybe once every other year and just clean all of your docks and have them clean up all.

The other thing to think about with metal is you have to worry about condensation, right? Because the metal does

condense pretty easily. So in that case, you'd want to make sure that the outside of the duct is insulated and that'll keep the temperature differentials apart so you don't get condensation.

So what other areas in addition to the shower and its back systems, where else do you commonly see the problems? All right. Showers are probably one of the bigger items.

I can't tell you how many showers I've had to rip out. And some of these were like really nice, friendly, newly renovated showers. The reason being is that waterproofing is a big thing that has to be accomplished with your shower because grout itself is semi porous and semi porous means it will absorb moisture.

And what happens is you'll see is if people just tile on top of drywall, I mean, that's probably the worst thing you can do because that grout moisture will absorb into the ground and definitely impact the drywall that people actually do that.

Yet even still to this day, it's still happens. So going like with cement ball would be a great alternative, of course. But even cement boards, cement also is semi porous, which can absorb moisture.

So if the goal is to make sure we're not getting any water inside the wall cavity. Right. Because typically whatever's on the other side of that bathroom is probably going to have drywall.

So we want to make sure that we're waterproofing the shower. So if you want to use cement board, which I think would be a good alternative hardy back or some of these cement use products, it's great, but we need waterproofing on top of that.

You know, probably Red Guard is one of the most famous ones that you hear about. It's like a fiberglass based coating. It does have verses. You'd want to well, ventilate after using that.

Common Mold Hotspots in the Home

But there's also some Green Guard gold certified products out there, like with Ladder Create that make waterproofing no matter what you pick or what you decide.

At the end of the day, just make sure you get the shower's water properly waterproof before you tile, because I've a lot of mold grows in showers just for that reason.

So how do you know? Like if there aren't any visible signs? Like what makes you decide to rip out a shower? Well, I mean, the showers that I've ripped out have been tested and had had some visible signs.

I've been tested, validated that had an issue. So what are you looking for with the shower? How would you know? Well, so I think one of the best things to look for is mold growing in the grout.

And so just to give people a frame of reference, you know, it's even if it's waterproof, you can get more than the grout over time. But if you clean it off and it's, you know, you don't see mold pop up for a month or two, that's a good sign if you clean it off.

And like three days later, the mold is back. That's a bad sign. That means that it's probably behind the grout, growing through the grout as opposed to growing on the surface of the grout. Right.

So that's kind of that's a good telltale sign. And then yeah, and I always recommend, like if if it keeps coming back, just test it tested to verify you know testing is our friend data tells us the story that we need to know.

And if you test a wall and it comes back high levels, then unfortunately you're probably have a waterproofing issue and need to redo the shower. That is a very common one.

Okay. What where else do you see commonly? Attics, crawl spaces, basements, you know, attics with roof leaks.

Roof leaks happen, unfortunately. Are attics are pretty well insulated.

So a small roof leak in one corner of the attic, you know, can cause a problem that impacts the insulation throughout the attic. So it makes it kind of more of a bear to tackle, if you will, crawl spaces in basements.

They're sub grade typically. And sub grade spaces are prone to hydrostatic pressure, which is essentially the pressure of the water that is in the soil outside our foundation that pushes against the foundation, which allows moisture and water vapor to intrude.

The tricky part about this is you don't necessarily need to see standing water in your crawl space or basement to have your basement or crawl space for a mold.

And that's one of the trickiest things because people say, no, it's bone dry. And it's like, well, bone dry as far as puddles on the floor or bone dries.

And the humidity is really good because a lot of a lot of crawl space, their basements, you know, some of these humidity readings are well above 60%, especially summer months and things like that.

And when you have that that situation happening, mold can start growing. And just 24 to 48 hours. And so you'll start to see a lot of basements in crawl spaces have issues.

And what's crazy about that is even though you might not go in your crawl space, 30% of the air that you're breathing on the first floor right above that crawl space is coming directly from the lowest point of that crawl space, which means if there's a problem there, it's definitely going to impact your air quality and it's definitely going to unfortunately, those particles will get inside of your body every time you take a breath roughly 20,000 times a day.

So this seems to be one of the most open whelming areas, areas of remediation to me, like how do you actually get a basement or a crawl space so that it's not impacting the house or you know, here in Texas, sometimes we have people like just build their houses on to the side of a cliff.

So it do you think we can actually remediate them and and keep, you know, have a healthy home with them. Yeah. I mean my first house had a crawl space and, you know, it was a bear.

I mean, I'm not going to lie. It was a lot of work. I had to remediate to crawl space, do a lot of waterproofing better. We had to fix some grating on the outside and make sure we had more water diverting away.

But yeah, it's it is very possible once we did all of that, I mean, the crawl space stayed dry, humidity never really got past 45%, but we stayed in that sweet spot of 40 to 45%.

We had to put a dehumidifier in it to make sure that we just kept it, you know? Yeah, Always maintained. But yeah, it is, it is possible, but it does require investment.

And unfortunately, a lot of houses across America do have crawl spaces. We we did this theory for many years where we essentially ventilated them because we thought that, well, if we have ventilation, right, we won't grow mold because it's ventilation.

And we put a couple of vents in. A lot of this actually became CO two for flood purposes. Well, unfortunately, I can tell you from experience I've seen an authentic crawl spaces with plenty of issues to tell you that it's not foolproof.

It's not going to work the way in which they did. Matter of fact, I can show you crawl spaces that are built on stilts where essentially there's really no side walls and there's it's totally vented, essentially.

And you still have more growing on the underside. And so we have to understand that if there is humidity outdoors, it is impacting the crawl space with those vents.

There's just no way you can't do humidify the outside air. So we're actually much better off with a crawl space with a sealed system where we don't have these vents and we're humidifying because then it's in our control.

Anything that's outside of our control puts us in a position where, you know, we get a hot, humid summer and we have a problem, you know? And so I think it's I think we want to kind of look at closing up the vents and start to demystify.

Same thing with with spray foamed attics. You see a lot of spray foam attics these days. Energy efficiency has a huge push and there's no dehumidifiers up there.

And we all know that humidity rises and that hot air rises and it all just collects in the attic. So I've seen, you know, mold growing and spray foamed attics that, you know, was supposed to be impossible according to the building science community.

But it happens. And it's because we're not thinking about some of the other things that happen when we make these types of changes. So you want to spray foam your attic for energy efficiency.

Great. But just make sure you do humidify in that space as well. So you've said some really important things here, especially about what is a safe humidity level.

So I think the goal, 40 to 45%. Yes. Will start getting over 45%. If there is any mold in the environment, it's more likely to have a party of mycotoxins so people can have a humidity meter that they keep in their home so that they can keep an eye on it.

And then if it's running higher than that, what do you recommend? Yeah, if it's running higher than that, you know, you want to understand why, you know, HVAC sizing is a pretty big problem, as you mentioned, that can set off the humidity throughout the house and make the humidity higher than it needs to be.

And so making sure you have a properly sized fact will definitely help with that. Sometimes we have, you know, those vents, right, Vents in our crawlspace, vents in our attic that allow a lot of humidity to come in at certain times of the year.

And so we might want to supplement that with dehumidification systems, whole home dehumidification systems if necessary. Sometimes there's just, you know, they're just needs to be on the lowest point of the house.

You know, a lot of times you have so much moisture coming in from your crawl space or basement that if you control that, it'll stabilize the humidity in the rest of the house.

So you want to kind of take that humidity monitor. You can get a really inexpensive one for like 20 bucks on Amazon these days and just go throughout your house and take note of the readings and where you see readings are higher.

You might want to take a look at that. And on the flipside about humidity, I've had clients that have overdone it. You can overdo it. You don't want it to be too low because not only will your skin crack and you'll be uncomfortable, but you know, our houses are made of wood, and wood can crack and our moldings can crack and things like that.

So 40 to 45% is kind of a sweet spot. I wouldn't really go lower than 35%, to be frank. And once we get 50 and above, that's where, you know, we start to get into the danger zone, because really 60% is where it can start to grow.

And it only takes 24 to 48 hours to begin with. So this is great because we've talked about some of the most common areas to be looking for. Was there any other area that you wanted to talk about as far as some surprises that you've seen or things to not miss?

Yeah, you know, I mean, the last I say the last major thing, of course, like any anywhere where there's plumbing,

laundry rooms, kitchens, etc..

Remediation, Removal, and Post-Cleaning

But I would say that probably even more important to to cover would be exterior walls around windows and doors. I had a I bought a house back in October and I did some work to it and remediated it.

And this is one wall in my living room and it looked totally fine. It was green that that was just a paint color, but it looked totally fine. You would have never you never suspected a problem?

No, No issues. We're removing all the baseboards, taking out all the floor and the room. There was no signs, so nobody tested that room, right? So we thought, no problem.

So we take out all the floor, we take out all the baseboards. And I'm looking at at at the bottom. And I noticed like a rusted nail or two. And so I'm like, well, there's a rusted now there's got to be moisture.

So we set up containment. We start opening up the wall. Lo and behold, the entire wall is rotting and it's lit. It's rotting. We had to rebuild the entire wall.

It's stucco. So we had to pull off all the stucco, redo the entire We ended up being like like a massive project that I was unexpected and surprised. But the reality of the situation is, is that an exterior wall has has a lot of surface.

And if there's a problem, it could be hidden and you have no idea and there might not be any signs. I mean, I tell you, there was no signs. And until you actually took a look.

So exterior wall is always something that, you know, it's smart, that's smart to look at, you know, extra carefully because windows can leak and they can leak behind the drywall.

And this is exactly what was happening. This was leaking behind the drywall. So the drywall wasn't impacted, but the wall cavity itself and the two by fours and the sheathing was impacted.

Right. And started to rot. And so. So the windows were installed improperly or. You. No, they were about 30 years old and past their their lifetime, unfortunately.

And that was one thing we knew. We knew we had to change all the windows, but we didn't know just how much some of the windows were actually impacting the structure.

Yeah, that's such a big one. Even in new homes, I'm seeing quite a big problem with all the window installations. Yeah, I mean, some of them are replacement windows when they should be new construction windows and so that the only thing that is actually keeping water out is some silicone.

And silicone breaks down over time and it allows water to intrude and especially on a new home, new homes are doing a lot of shifting and settling so that silicone can separate even within the first year.

Right. And so, you know, we want to really be careful about windows and doors. It's something that we want to pay attention to. If just silicone is what's keeping your windows watertight, definitely make sure you inspect that pretty regularly.

Like every six months, once a year. Probably once a year would be good. All right. So we found some mold setup and containment. What's next? Well, you have to, unfortunately, demolish walls typically.

Yeah, Depends, obviously, where you're you're finding mold. Mold in the shower on the grout. You clean it first. If it doesn't come back, you know, for a month or so.

That's good. That's that's normal surface mold that will grow inside the grout. But you start having mold behind a

wall. You have to open up that wall.

You know, there's going to be insulation behind the wall. There. It could be growing on the beams if it's an exterior wall and the sheathing as well. So you really need to open it up and check it out.

And it really exposed the damaged the other thing about mold is it has roots called hyphae and they can grow a couple feet beyond the actual signs of staining or, you know, beyond the actual signs of the mold growing.

And so you need to really go a couple of feet beyond what you actually see to make sure you get everything. And you really need to clean the entire wall.

The other thing about the restoration industry in general that drives me absolutely up a wall is, you know, these two foot flood cuts, I you have buildings that have leaked from top down and they just cut two feet off the bottom of the floor.

But water has traveled and has gotten the materials wet from above all the way down. And so they cut two feet off the floor and put some fans in and say, okay, we're good to go.

But when you test it, you'll see that the entire wall is now impacted because it just didn't dry fast enough. Do we have a water mitigation industry? Right.

It's really interesting. That's the industry that comes in first, these big, you know, emergency service companies. And then you have a mold remediation company that comes in after water mitigation is done to address any microbial growth from the dry dryer.

But do you know what it actually takes to dry out a building when it gets wet? 3 to 5 days. Do you now fast mold grows 1 to 2 days. Yeah. So you can't dry out a building.

But we have a whole industry trying to dry out buildings. I just I find that interesting. Yeah. So really, anything like that, What needs to be removed?

You have to remove it because it just won't dry. It just fall dry. You know, think about it from this perspective. If you're, if you get a kitchen counter wet and you put a wet sponge on top of that counter, the area around that wet sponge will dry much faster than the area underneath that wet sponge.

Why is that? Because it traps moisture. It's to surfaces touching one another. Well, think about our buildings. Drywall is touching our two by fours. It's touching the insulation.

You have too many services touching one another. So when it gets wet now they both both services get wet and it traps that moisture between it and it takes 3 to 5 days to dry from that point, which is too far, far along because mold has already started to grow.

So it's just very interesting because, you know, I think for a lot of people, they, you know, they always get told really good information or it sounds good, I should say, but that's only in theory, in practicality, it doesn't actually accomplish what it's supposed to accomplish.

So for me, you know, going up two feet is not not the answer. Unless the leak came horizontally from the floor. But if it's coming from above, you really have to go the full wall up.

I think that's something that a lot of people think, you know, because they rely on the experts and professionals to tell them. And a lot of people get misguided in that aspect.

So when you have a leak, no matter how painful it is or how difficult it is, you need to open it all the way up, you know, And that is what's going to really protect you and your house.

And it's going to be cheaper in the long run because if you get it, if you get it while it's, you know, within that 24 to 48 hour period and you remove it all, then it actually will dry and then you won't have mold.

Right. And now it's a lot cheaper because now you don't need all this mold remediation to be done. And have all the health consequences to deal with. So I know you know there's different thoughts on but whether you have to remove things when you can use enzymes and chemical cleaners and all that kind of thing. So I'm with you on remove anything that you possibly can remove.

Sometimes there's some situations where there's something, you know, like it sits on a beam or something like that. You can't remove that particular beam.

It just may maybe getting in the weeds a little bit. But I think that's an important piece for people to understand how to fully get remediated. Yeah.

So when you have some cheaper services like concrete or wood, that's drywall. We talked a lot about drywall and insulation which are fully porous. You just have to remove them completely When you start again on a semi poor services like, you know, beams, wood or concrete and you have mold growing into it.

The good thing about it is it doesn't grow very far and you actually can sanded it away wire brush it away, physically remove it without having to, you know, redo a concrete wall or remove all the wood.

The only time you really ever need to remove a structural wood is if wood rot started to develop, which is actually a bacteria that's now eating away at the structure, which can cause, you know, some really structural concerns.

And to really when you see something like that and you're trying to understand what to do, that's what a structural engineer would be valuable to provide some feedback and input.

But yeah, no, you just want to remove the mold from those things. And luckily anything semi porous you can remove from having to physically remove it.

And then non-porous is the best because you can just literally wipe it away. No sand or wire brushing it. It'll come right off because it's actually growing on the dust, on it, on the non-porous item.

So that makes it really easy to clean like plastic glass. You know, etc.. So you don't ever use sealants or harsh cleaners or that kind of thing. You just get rid of the mold.

Yeah, I mean, it's all mechanical, right? So all the cleaners we use are botanical cleaners and they're essentially essential oils and surfactant or, you know, soap and you know, you're using basic.

Yeah, not because chemicals, obviously. It's interesting how we use chemicals to improve air quality. The chemicals themselves don't improve air quality.

So I never really understood that aspect. I have never used a chemical to remediate at home and never will because I don't I don't think it's necessary to be honest.

When we get to the sealants, that's a whole different conversation because I think we have this problem in the industry where some people think they can just paint over mold. You can't if you want to use a sealant which which can be a great idea, you have to remove the mold first and then apply a sealant.

So sealant should be more of like a preventative measure, you know, turning that semi porous surface now into a non porous surface with an anti-microbial coating.

Great idea. Definitely helps provide preventative measures, but it is not remediation. You have to remove mold first, then use sealants later to protect it.

Thank you. So I want to talk about a couple more things. One would, be the people doing the remediation and what they need to do to protect themselves, because these some of these chemicals that they're dealing with and aerosolize and you and standing and that kind of thing, are they there at the chemical biological warfare level?

Very dangerous. What to what do people really need to be doing to protect themselves that are in this industry or or they decide to stay in the household?

These kinds of things are being done. Yeah, there's typically two different things you need to worry about. You know, when you're in the beginning stages of remediation, need to be worry about particles and particulates obviously is going to be the the the main thing that you're encountering when you're scrubbing, when you're doing demolition.

And so you want a, you know, P 100 filter that is going to remove these tiny particles before they impact the body. When you're taking a breath, you're also going to want to wear like Tyvek and gloves.

And the reason being is because you don't want this stuff to get on your clothes. You want to bring it home to your family and loved ones. Lastly, when you're applying product, you're going to want to probably wear a full face respirator because at that point you're worried about your eyes.

You worry about getting stuff in your eyes, you know, especially if you're a company using harsh chemicals. That's that's a real, real risk and danger.

And again, you'll want to have probably an organic acid and vapor cartridge for that part, because the particle filters do not handle vapors. And so you'll need something that does handle the vapors as well.

And so I think you'll need two different cartridges typically from start to finish, and you'll want to make sure you have two different masks, maybe a half mask for the particulate, but definitely a full mask for for applying the products.

Thank you. So important. And then once the remediation is complete, how do you know if if it really has found problems? Yeah. So processing is really important that you do before you reconstruct the space because it doesn't matter how good someone is, how great a company is.

We're talking about micro biological contaminants that are 25 to 50 times smaller than what the eye can see. Right? So the stuff that you see, there's a lot of it there because that's how small this really is.

And so you want to make sure it's all gone. So you want to post, test, verify, it's all gone, you know, because it's very it's very possible you thought you only had to go four feet and you realize it's still picking up.

You have to go six or eight feet. Right? And so that happens. So you want to make sure we get testing before once you get testing and everything looks good, then you can start building back.

But there are the two things to think about, right? So we talked about HVAC and how important that is. While there's this tricky step between making sure when you go back into your home, you actually feel the difference in the air quality.

And in order to achieve that, we need to make sure that the house is clean and all this contaminate that dust that has been there since since the sources of mold have been there, is removed.

And we also need to make sure that the HVAC system is properly clean and all that stuff is removed. Well, one of the challenges here is that when you clean the HVAC system, even with Anac, a certified contractor, one of the best, some of that stuff is going to escape out into the environment.

And that is because no, no duct system is hermetically sealed. Now, the industry average is like 97%, and that's probably being generous. So when you look at that, you know, you're going to have some of these particulate,

especially how small they are, escape into environment.

So it makes sense to clean the HVAC system first, then and leave it off, then clean entire home, get rid of all the dust, all your belongings, etc., and then you will actually have a much cleaner environment.

All right. So explain cleaning, because people may be just thinking like a regular dusting. Yeah. So basically we have how this works. It's kind of like trying to think of a good analogy.

If anyone's ever smoked a cigaret in their life or seeing someone smoke a cigaret, and especially it's done indoors, you'll notice that the the smoke just kind of floats there until air kind of moves in and swishes it around and kind of dilutes it.

But it just kind of floats there. This is what's happening with particles produced by mold because they're so light, they're so small. It just kind of floats real close where the surface is.

What then happens is our dust that is already everywhere. Right now I am breathing in dust. You're breathing in dust. Our eyes look through it. We don't really see it.

But if you were to, you know, go at night and turn on a flashlight in your house and see all the dust particles in the air, or if you sit near a window on a sunny day and you see that ray of light peek through and you see all the dust in your air, you're going to really get an understanding of just how much does is actually in our air.

Well, as these particles float nearby where the sources are, it mixes with our dust that's already aerosolized. And then our dust settles and then our dust rehearsals and it's going to have all these little tiny particles with it.

And that's how this stuff is entering our breathing zone. Even when we have a problem in one part of the house, we're feeling it in another part of the house is because this dust is migrating and traveling and it's still entering our breathing zone.

So we have to do is we have to remove every speck of dust.

Protecting Workers and Verifying Results

Now, where is dust? It's not just on the floor, it's on your walls, it's on your ceiling fans. It's on every shelf, on every piece of furniture. You could think of.

It's in your stuff, it's on your books, It's everywhere. It literally envelops everything inside of our home. And so we have to aggressively wipe down our walls and wipe down our floors and clean all of our belongings.

You know, we might have couches that we're not willing to part with. Well, my recommendation would be to get the couch tested. You can do a tape test and send it in to really evaluate.

But if you're hellbent on keeping it, then, you know, make sure you really, really hepa vacuum it very well, you know, And, you know, you got to do the best you can, of course.

But think about, you know, how much all of this dust is contaminated across all this time that those sources have been. There are some of some of these sources might be there for ten plus years.

And think about the smoking, because it is like somebody somebody's been smoking mycotoxins dust in the walls for ten years. So can you imagine if somebody was actually smoking with a cigaret that long, the amount of pollution it would be in it?

Totally. And you know that. So you have to really think about and these particles are very light. They become a part of our dust. And so the goal is we have to remove our dust.

And if you've ever cleaned a home and you've done it really thoroughly, you'll understand that cleaning is actually exponential. So it is it is impossible for anyone to get 100% of the dust out when they clean, because as you're dust is rear slicing.

So it is it is tough, it is challenging, it is tricky. It is exhausting. But it may take, you know, two or three rounds of cleaning the home to really bring the levels to, you know, I won't say the word safe, but to ideal.

Right. Because obviously every time we clean, if we're removing 80 to 90%, every time we clean, we're in a better spot than we once were. Right. So you want to keep taking these steps in the right direction, but you can retest your dust just like we started at the beginning of the journey.

We end off the journey with retesting our dust thereafter, and that kind of guides us to. All right, how how what's the difference in all of this? How is this impacting the amount of contamination that's in my environment that I'm breathing in every day?

And you'll you'll see those numbers drop, which is really, really cool to see. So it seems prudent to me to wait a period of time then just to make sure that everything's really done properly and every variation you the problem with sticks, that they're not a new problem that's been created accidentally.

What periods of time do you think is reasonable to retest? And yeah, I would say if you just remediated, you just cleaned your, cleaned your home. I would wait a good 4 to 6 weeks, let the dust settle, get some new dust generated so you get a really good look at what how things started, how things finished and, you know, don't get discouraged.

I know it can be discouraging when it's not perfect. I wouldn't expect it to be. You want to look at the data side by side and you want improvements and you want significant improvements.

And when you get those significant improvements, take a win and when things aren't perfect, it's no problem. You can get it there. It just is going to take a little bit more elbow grease.

It's a journey. There's no light switch on and off here and we have to utilize scientific data to guide us. Right? And so I think one of the biggest things is just don't get discouraged, don't feel like it's all for nothing because you did make massive improvements.

You'll see it in the data and you just got to have some patience and keep cleaning and test again in another two or three months from now and you'll see them continue to drop.

If they don't drop, then obviously there's something in the environment still contributing to that and you got to figure it out. Beautiful. So you've mentioned controlling humidity.

You've mentioned making sure that every sealed shower and window any of those areas sealing is staying intact. Are there any other tips for keeping the house healthy?

What's your gut microbiome improvement? Yeah, I think in terms keeping the house house healthy, you know, one of the best things and most important things that that everyone needs to do is upgrade their HVAC filtration system.

Get a MERV 16 filter. It's the highest MERV rating you can get. The higher the rating, the smaller the particle can remove at the highest efficiency. So you want to have the best filter that that you can get, because I think that is going to be really important in protecting your air quality, because protecting the HVAC system is the lungs of the home is going to make a massive difference.

You also want to look at some good botanical cleaning options. You know, how do you keep your home clean? Thereafter, we're going to say that dust is going to be the enemy.

You know, is it Dust is where toxins and allergens and everything else accumulate, including mold and bacteria. So

we want to make sure we're keeping up on top of dust.

The more we allowed us to accumulate, probably the more sick we're going to get. So it's really important to look at your cleaning products, make sure you have some good botanical, broad spectrum disinfectants that you can keep your house clean.

And the other thing about HVAC filter, if you get a really good filter, you're essentially also turning your back system into an air purifier, by the way, because so an an air purifier is it's a vacuum and a filter.

So investing in that, you won't need a little plug in places all around the house. But of course, if you still want to supplement with those, you can.

So I think, you know, clean air, dust free these are some of the real things. And last but not least, also very important, start doing some more routine inspections.

A lot of us are not proactive on our home. We wait till things break and then we fix them. And life is busy and we don't always think about these things.

But, you know, we all have technology now set in a calendar alert to have a roofer come out, check your roof once a year as a door and window specialist to come out and check the waterproofing of the doors and windows.

You know, depending on what your exterior is made of, you know, if it's siding or if it's stucco or brick, get someone out to just take a look at the pointing or the stucco integrity, you know, to see what's happening there.

Because I think the more we do that stuff, the more will catch problems when they're small. And problems are a lot cheaper to fix when they're small. That's great advice.

Let's let people know where to find you. You've got such a wealth of information and such a passion for helping this industry to improve. Yes, and I appreciate that.

If you want to search for me, you can find me at theMichaelRubino.com is a great website and you'll find all my social media stuff there. I do a lot of social media posts that make you think about things you might not ordinarily think about on a regular basis.

So might be some good content for you. If you need help, you need help creating a healthy environment, homecleanse.com is a great resource for you. And then if you are inspired like me to make sure that we reverse this illness that we have as a global society, please join the fight with us to changetheairfoundation.org.

Thanks so much, Mike. I love everything you're doing and you know even that you're learning every day, you're even improving how we can can make homes healthier and think is, thank you so much.

Oh, thank you. And yeah, there's no mastery to this. It is you. I will be learning probably every day for the rest of my life. And there's nothing more exciting than that.

Beautiful. Thank you so much for all the wisdom shared today. Thank you. Thank you for having me.