What's That Smell? mVOCs & Mold With Jason Earle

JE

Jason Earle

0:00

Yes, you can have a mold problem without smelling it, and there's a bunch of reasons for that. Number one is it could be dormant. Mold produces that…those microbial gasses—think of them as digestive gasses—the same way we produce gasses when we digest. And incidentally, those are not our gasses; those are also microbial VOCs. We're really not digesting. We're ambulatory composters, if you really think about it. And so, it's not dissimilar in the sense that mold is digesting your building, and…but it doesn't have a stomach. It doesn't have a digestive tract. It's doing this externally. And so, it's releasing those gasses into the air as it sort of breaks down, as it breaks down the stable components (like drywall paper) into nutrition, and then it releases these byproducts, some of which are gasses. And so that's what we pick up as the musty smell. Now…

KS

Kendra Seymour

0:47

Hello everyone, and welcome to *Your Indoor Air* podcast, brought to you by Change the Air Foundation. My name is Kendra Seymour, and today we're going to be talking about that moldy smell: what it is, what it might mean for your home and your health. Now the technical term that you may have heard for this is Microbial Volatile Organic Compounds, or mVOCs for short. So, to help us understand what our nose knows (see what I did there?), our guest today is Jason Earle. So, thank you, Jason, so much for being here.

JE

Jason Earle

1:14

It's a pleasure to be here. Thank you for having me.

KS

Kendra Seymour

1:16

Now, if you don't know Jason yet, he is a man on a mission. An adoring father of two boys in diapers, he's an incurable entrepreneur and indoor air quality crusader. He's the founder and CEO of GOT MOLD? and the creator of the GOT MOLD? Test Kit. Now, the realization that his moldy childhood home was the underlying cause of his extreme allergies and asthma led him into the healthy home business in 2002, leaving behind a successful career on Wall Street. Over the last two decades, Jason has personally

performed countless sick building investigations, solving many medical mysteries along the way, helping thousands of families recover their health and peace of mind. He is featured and appeared on *Good Morning America*, *Extreme Makeover, Home Edition*, *The Dr. Oz Show*, *Entrepreneur*, *Wired*, and more. So yes, I'm so excited that you're here. I know you and I have had some really interesting conversations around mVOCs, so I'm excited to dig in and help our listeners learn a little bit more about what might be going on in the home. So, let's start, though, with kind of an orienting thing. And it's going to seem like a simple question, but I think this is where a lot of people start. You know, if you smell mold in your home, it's an indicator that there's probably something going on. But if I can't smell mold in my home? Do I have a problem?

JE
Jason Earle
2:31
Very, very good question. And also, thank you so much for having me. Really, it's a pleasure to have this conversation sort of in public, because we've had so many interesting conversations and I wish we had pressed Record for those as well. So…

KS
Kendra Seymour
2:49
I'm glad we finally are though, yes.

JE
Jason Earle
2:52
Absolutely.

KS
Kendra Seymour
2:53
I think our problem will be, is keeping to the time restraint. So, we'll do the best that we can.

JE
Jason Earle
2:56
Absolutely. Absolutely. Maybe it'll be part two, perhaps.

KS
Kendra Seymour
3:00
Yeah, there you go. I'm sure we'll have follow-up questions.

JE
Jason Earle
3:02
Absolutely. So, yes, you can have a mold problem without smelling it. And there's a bunch of reasons for that. Number one is it could be dormant. Mold produces that…those microbial gasses—think of them as digestive gasses—the same way we produce gasses when we digest. And incidentally, those are not our

gasses; those are also microbial VOCs. We're really not digesting. We're ambulatory composters, if you really think about it. And so, it's not dissimilar in the sense that mold is digesting your building, and…but it doesn't have a stomach. It doesn't have a digestive tract. It's doing this externally. And so, it's releasing those gasses into the air as it sort of breaks down, as it breaks down the stable components (like drywall paper) into nutrition, and then it releases these byproducts, some of which are gasses. And so, that's what we pick up as the musty smell. Now, if it's dormant, those metabolic processes stop. That doesn't mean that you don't have a mold problem. That just means that it's not actively producing these things. The other thing is, sometimes it, there…the pathway to you is not clear, right? In other words, you…the air has to get to you in order for an odor to get to you. And so, depending upon how the building is built, and depending upon ventilation, and lots of different variables, sometimes you can have active mold growth in a building producing mVOCs, and you're simply not…they're not being received by your olfactory scen- by your sense of smell.

KS

Kendra Seymour

4:26

Yeah. And I think too, what's interesting is…and I'm glad you brought up the dormant state. Because sometimes people will say, "Well, I only notice a smell, like, after a big storm" or, like, intermittent, maybe only during a certain season of the year. And that's because it's going in and out of the feeding cycle. So, let's…I do want to, like, unpack what an actual mVOC is a little bit more. But right before we hopped on, you brought up something really important: that sometimes people don't understand the difference between a mycotoxin and an mVOC. Now, without taking us all down the mycotoxin path, can you just orient real quick—like maybe spore and mycotoxin—so that people kind of understand these different components? I just want to make sure we're all on the same page before we go further.

JE

Jason Earle

5:11

Yeah. As you know, that…this is like a field of rabbit holes. But for the sake of simplicity, essentially, when we're talking about mold, we have three big buckets. This is hyper-reduced for simplicity. So, it's spores, which are essentially those hardy reproductive capsules (seed-like capsules) that go forth and multiply, right? And so, we pick those up in spore traps and other and dust tests and things like that for analysis. The other component that's very commonly discussed but, I would argue, very poorly understood, even (especially) amongst people who purport to be experts in this space, are mycotoxins. This is…these will get all headlines. And what's interesting is, you know, 100 or so of them produce these compounds on…and even so, do them intermittently. So, not necessarily a great marker, honestly, for the presence of mold growth, but that's a different conversation.

The third bucket, which is probably the most overlooked but probably the most abundant, honestly, when it comes to a mold problem—and perhaps the most pernicious—is the musty odor, which are these microbial VOCs. Now we all know, or most of us know about VOCs in terms of the man-made ones, right? So, like, when you walk into a new house, or you get the…your new car, or you know that…those smells. Gasoline: a smell that's both toxic and also much loved by many people. These VOCs are also produced by microbes. And so, because they are gasses, they are volatile, and that means that they evaporate into the air. And unlike spores and mycotoxins, they do not penetrate walls readily…they DO penetrate walls readily. The mycotoxins and spores do not penetrate walls readily because they are

physical matter, as opposed to…they're particles and crystals, and they do not penetrate. The mVOCs do penetrate the walls. So, if I'm being clear.

So, the idea here is that…there are lots of other compounds, by the way, that molds produce. I mean, thousands of different compounds. There's beta-glucans, and there's ergosterol, and there's all these other things. But for the sake of simplicity, when we're talking about…especially when it comes to testing for these things, we really look at spores, mycotoxins, and microbial volatile organic compounds. And people often confuse the mycotoxins and the microbial volatile organic compounds, which would be a fun thing for us to unpack.

KS
Kendra Seymour
7:44
Yeah. So, to kind of like, maybe, summarize that, the mVOCs (So, we'll be using that term when we talk about the musty odor going forward. Um, so we'll use mVOCs for…to kind of capture that) is a gas, right? And it's something that, unlike mycotoxins, all molds produce and VOCs, right?

JE
Jason Earle
8:05
That's right.

KS
Kendra Seymour
8:06
It's the practice by which they're digesting the building material, whereas not all molds produce mycotoxins. And those are particles, not gasses.

JE
Jason Earle
8:17
That's exactly right.

KS
Kendra Seymour
8:18
Yeah, awesome. So, let's talk a little bit…and I'm glad you differentiated, because people are, maybe have heard the term VOC. We're talking, again, about the mVOCs. But if they're always produced, then is there always a noticeable odor? I know you talked before about, you know, air currents bringing it to our nose. But there is some variance, sometimes, when we talk about that moldy smell. Sometimes people will say it's, you know, "Oh, it's a musty smell. It smells like Grandma's basement." But then I've heard people describe, you know, sometimes like, "Oh, it almost smells like, you know, dirty socks." Or I've heard, you know, cat urine. Is there something that accounts for the variance in these odors?

JE
Jason Earle
8:59
Sure. You know, so when we're talking about microbial VOCs, notice we didn't say mold VOCs.

KS

Kendra Seymour

9:05

Yeah.

JE

Jason Earle

9:06

And that's an important distinction. And again, rabbit holes abound. And so, when we're talking about microbes, we have to, you know, also talk about bacteria. And, you know, there's been a lot of talk recently about *actinomyces* and other bacteria that do grow in tandem in the same conditions that allow mold to grow. *Actinomyces* are actually soil bacteria, but they do really, really well in damp buildings. And they produce some signature scents also: earthy scents, like jasmine for example, which is…might smell like a wet potted plant. So sometimes more of an earthy smell.

There are lots of different compounds that all come together in sort of a potpourri, if you will. And depending upon what it's eating, just like when we make different smells when we eat different things, when mold's growing on different materials (or what we call in the trade "substrates"), then it will produce different compounds. Also, depending upon where it is in its life cycle and how it…whether it's being threatened or not. And there's just so many different variables. Temperature has an impact on these things. And so, when we look at…when we're talking about these odors, they are all different. However, there's also a commonality amongst them. It…just like everybody knows the smell of feces, even though, believe it or not, they all have different compounds coming off of that too, right? There's sort of a signature poo smell, and there's kind of a signature damp smell. And so, we know this sort of instinctively as humans, being around this for many thousands of years. But it is, in fact, a different sort of composition in almost every circumstance.

KS

Kendra Seymour

10:44

Yeah. Well, and I think that's an important point. 'Cause when we're talking about the real-world situation in your home, and if you have water damage, you have a variety of building materials (drywall and wood, and you might have insulation). And as that's getting wet, you're not going to have…we may not have just mold. You're going to have mold, and you're going to have bacteria. And as those things break down, they're creating their own mVOCs, to your point. But then does this…or to what extent does it occur? Like, if I have mold behind my wall, or maybe it's underneath the bathroom or kitchen, and it's breaking down that material, can mold release VOCs from building materials? And does that get into our air as well?

JE

Jason Earle

11:28

Yes. And so, there's something called hydrolysis, which is this effect of, essentially, temperature and humidity in the release of volatile compounds. And so, yes, as soon as you get something wet, you're going to potentially change its chemistry. And so also, of course, in the breakdown of these materials, you're going to release different compounds that may be in those materials. And so, mold does this really fun thing. Everyone talks about methylation these days too, when it comes to detoxification, and

it's something that I think very few people really understand. In fact, I'm not…no expert in it, either. But what's fascinating is that mold and bacteria also have the ability to take things that they're…that are in its…on its plate, right? And instead of assimilating it, because it may actually be toxic to the microbe, it can pass it through itself and change its composition and release it.

And so, David Krause, who actually is on our summit, talks a bit about this. In fact, he's written on this. And so, there are…there's a case of this toxic compound called Scheele's green. It was a paint used back in the 1700s, and it was made with arsenic, which, of course, is very toxic. And we know not to mess around with that stuff, but they had it on everything, right? Clothing and wallpaper. And they found even back then (I don't know how they did this, because we could barely figure this out now, probably), but there…people were getting sick. And in some cases, they were dying, and couldn't figure out why. And it's…somebody very wisely figured out that there was…*scopulariopsis* was actually growing on the…this pigmented wallpaper. And instead of being killed or inhibited by the arsenic, it was actually methylating the arsenic and turning it into arsine gas, which is highly toxic to people. And so, yes, the long, short answer is: What is there will either be digested or released, essentially. And then there's some, essentially, you might call it, sort of digested ash left behind, right? The sort of, the stuff that's going to be left to the next round of microbes.

KS

Kendra Seymour

13:41

Yeah. I mean, it's so fascinating, that story, that example. I've heard him talk about that before. Like, when you really think about it, it is, like, this potpourri. It's not a single thing; it's the bacteria and the mold, and the building materials that you're smelling. And I know—and I'll drop a link to it, because I know you've shared a lot of Joan Bennett's stuff, and talked to her. She's got some great papers we'll link to—and even just from fungal VOCs and VOCs, I think there's like 300, you know, identified individual types of mVOCs. And there's even more for plants and bacteria. And so, it really is like a giant science experiment in your home. And it does not help that we build our homes out of mold food, right? Like, it's not mold's fault…

JE

Jason Earle

14:25

No, it does not.

KS

Kendra Seymour

14:26

…you know? And it's just doing its job. It's, unfortunately, very inconvenient and can cause health issues. So, on that note, let's pivot, because other…obviously, nobody likes that smell. And if it was just a matter of smell, you know, maybe…I don't know, you'd be like less rushed. But we know there's more to it. So, can you talk to us a little bit about the known, or what we believe to be, health effects associated with mVOCs?

JE

Jason Earle

14:56

Yes, and this has been an area of great interest for me for 22 years. Mostly because in my early days, I pioneered the use of mold-sniffing dogs, and they target the source of that odor, right? That's what dogs do. They find…they have their…if there's something that has a unique sort of fingerprint scent, there's no better tool than a dog. And we consistently found buildings that had musty odors and relatively normal spore counts but serious symptoms. And then it would get remediated. We'd find mold in walls and we'd find the source, and then we'd, you know, come back and do the necessary testing. All the odors are gone and the moisture problem has been corrected, and the symptoms go away. And so, this really, you know, had me thinking for a very long (it's been two decades now) that this plays an outsized role in mold-related illness. And the research that has emerged since then, especially Joan Bennett's research, who is a dear friend—largely because she called once, after seeing us, by the way, on the news, and said, "I'd like to meet your dog. It's okay if you come too." So, she invited me up to her lab, and we bonded over microbial volatiles, and haven't stopped. And so, you know, the typical mold-related symptoms for a lot of people, aside from the allergic symptoms (and by the way, mVOCs can trigger allergic symptoms, so I don't want to skip over that), but tend to be cognitive, right? So, headaches, nausea, dizziness, fatigue, difficulty concentrating, and cognitive impairment. These are the sort of hallmark symptoms that most people complain about when they first have a mold exposure. These are also the symptoms of VOC exposure, by the way, right? So, chemical exposure. And so, it's no coincidence that these things overlap. It's not a Venn diagram. It's a straight up….Boom, right? It's…these are concentric circles, if anything, other than overlapping.

And so…and then, what's really fascinating is that there's emerging research around, sort of, the mechanism of how these things have an impact, especially people that are really sensitive to this stuff. Once you've had a big mold exposure, once you've had a big chemical exposure, oftentimes your chemical exposure creates a mold sensitivity. Mold sensitivity creates the chemical exposure. Anyone who's listening to this has been through it knows exactly what I'm talking about. And also, a sort of a hyperactive nervous system, right, where you suddenly become…there's a lot of fear, visceral fear. There's a lot of overactive immune responses; there's, you know, inflammation, things like that. And so, the mechanism for that has not really been well understood until you start looking at the trigeminal nerve, and this is fascinating stuff.

So, it's the fifth cranial nerve, there…with endings in the eyes, mouth, and jaw. And so, they…it works with the olfactory, with the scent of smell, but is—and trade...shares data with it—but it senses things below the odor threshold. And that's really key. And so, what happens is they're designed…or the primary sensory input is heat, pain, and cold for the trigeminal nerve. But they have a chemo sensor, or a chemical sensory component, too. And once they become irritated…and specifically, they get irritated by pungent VOCs. Now, microbial VOCs fall neatly into that category of pungent VOCs, right? Ammonia is also a pungent VOC. And so, when you're cutting onions, also, that's why your eyes water. So, this is all part of that same mechanism, right? And so, what happens is, when you become sensitized, these small amounts of small exposures can irritate that trigeminal nerve and trigger a cytokine storm, which triggers an inflammatory response, which manifests in so many different ways, depending upon your existing health profile. You've got autoimmune disease, suddenly you've got a flare-up, right? If…whatever is going on in your body when you have cytokine storm, especially if you've got Lyme or

something else that also travels that same pathway, you know, double whammy, triple whammy. And so, this is why it gets really, really messy. And this is also, by the way, why so many people who have this condition, have this sixth sense. They have, like, a "Spidey sense." They walk into a building, they go, "I can't be here," you know? And they have this overactive response. And no one else feels that way. And it has not been explained up until very recently. And then, sort of putting a point on that, what's also fascinating is that there's a number of studies that show that anxiety exacerbates that response. And ironically, of course, with that response triggers anxiety, and so you end up in this really negative loop, this vicious cycle of pain and suffering of anxiety. And oftentimes, this is why we see people do really, really well with neural retraining once they're able to either remediate or relocate.

KS
Kendra Seymour
19:54
I mean, okay, there is so many things we could unpack here, but let's start a little bit then. And I promise we're going to get to the dog, because I know someone's going to ask some questions, so we'll do that next. But I want to unpack the health side a little bit more. So, this trigeminal nerve, this is really interesting. Because you (if I'm understanding you correctly) you're saying that it can perceive things and notice things at a lower threshold than what you would…before I would…"Oh, that smells bad."

JE
Jason Earle
20:21
That's right.

KS
Kendra Seymour
20:22
And so, it's like an early warning system. And I know, you know, having been impacted myself and others, if you've been down this road, you know, sometimes you'll say you're a canary. Or even to this day, I can smell things long before anyone else in my family. Like I can walk into, you know, I walked into my parents' home probably about 10 years ago, and I walked over this threshold, and I was like "Something's going on right here." I was the only one who could smell it. And turns out I was right. But that's really, I think, important for people to understand too. Because, I mean, let's be honest; this is a stressful situation. And so, there…it can cause anxiety. Then you're anxious already, and then you get into this loop. So, let's…if you don't mind, let's take a moment though, and delve a little bit more into that connection with multiple chemical sensitivity. You'll see it as TILT, right?

JE
Jason Earle
21:14
Yes.

KS
Kendra Seymour
21:15
Because, to your point, a lot of people who have been in buildings that have made them sick from mold now, suddenly, are having a hard time with other chemical exposures. They can't walk down the laundry

aisle at the grocery store; the perfume from their coworker; the cleaning products in their home. All of a sudden, they are reacting to everything. And I know you're not a doctor, but can you speak to, kind of, what is going on there, what you've seen with some of your clients, and just with your history there?

JE

Jason Earle

21:41

Sure. So, it's extremely common, more so than probably anyone really knows until they get into this space, and you see that this is sort of a hallmark of a big exposure. So, MCS has been stigmatized, although the chemical industry, about eight or nine years ago, acknowledged it and sort of took ownership of it. But at the same time, the stigma has never really gone away. So, Claudia Miller is an amazing researcher down at University of Texas. She is also a…falls into the sensitive population and has been affected by this. And so, her research is, like many of us, very personal as well. And she retermed this "TILT," as you mentioned, which stands for Toxicant-Induced Loss of Tolerance. And I'm telling you all this because it explains it very well. So, what that means is…so it's the exact opposite of an addiction. An addiction (you know, with alcohol, for example, or caffeine) is something that…you will drink or consume more and more and more of to get lesser and lesser of a desired result. And so, ultimately, you get a tolerance. When it comes to these kinds of exposures, it's the exact opposite, where…a toxicant-induced loss of tolerance. So, these smaller and smaller and smaller exposures result in larger and larger and larger undesired outcomes. And so, you end up with these, you know, severe hypersensitive reactions. And so, what we know is that this is largely a nervous system issue. And so, the…but the treatments for it are, you know, have long been sort of elusive.

And that's why I point to the neural retraining: the work of like, you know, Cat King at Primal Trust and DNRS and Gupta Method and re-origin. You know, there's a handful of these that are doing really good work, and sort of, you know, they all have a different approach. But essentially, they're getting to the same place, which is like allergy shots for the nervous system. You know, smaller exposures, controlled exposures of the perceived threat until your body…sort of like PTSD training, if you will, PTSD therapy. And in many ways, you have to look at this as a trauma. I would assert that this is a trauma, that this is…that when people have this experience, that it is an injury. And it is an injury to your nervous system, more so, probably, than anything else, and resetting that is a challenge. But it is the only proven pathway that I know of to get people out of this really horrible loop. And it is, you know, it is something that, I think, people oftentimes get marginalized for this. Their friends and family don't want to be around. You know, it's very difficult to be with someone who can't be around social situations. You can't go to the hardware store, like you said, or the dry cleaner. But I often encourage the people that I work with to consider this as not a weakness, but actually as a superpower. Because the things that you're reacting to are bad for everyone. And so, you just happen to get the email first; you get the signal first, right? And so, you can protect yourself. This is a strength, not a weakness. It's a matter of channeling it. And so, that's why that work is so important. Because even the people who do get over it, they still maintain a sensitivity. They just don't have that outrageous reaction that's debilitating and disruptive to them and everyone around them.

KS

Kendra Seymour

25:03

Yeah. I'm so glad you said that, because for those listening, going forward this year, we are going to be

talking a lot about VOCs in general: whether they're microbial VOCs or they're coming from your building materials or your cleaning products; what that means. We're going to be talking about multiple chemical sensitivity a lot, until I hope to have Claudia Miller on. And so, there's going to be information coming for those listening. Because it really is…you know, I look at what happened to us; the silver lining is we are more aware now, right? We live more consciously; we live more healthfully. We make better choices, and we're more intentional. And so, I try to embrace that side of it, but that's super important. And for clarity, because talking about neural retraining, we (and I'm assuming you agree with me on this), we are not saying that you can continue to be exposed to these things and then, just like retrain your brain. You still need to work to reduce or eliminate exposure first. What you're saying, if I'm understanding, is it's this idea that they work in tandem together. Is that correct?

JE

Jason Earle

26:07

Yes, there's a couple points there. First of all, you cannot…you can't recover from a trauma if you're still being traumatized, right? I mean, it's just not…you're never going to recover from violence if you're still dealing with violence, right? So, you need to, you know, it's, it's…you need to have space and distance from that so that you have perspective. Because a lot…this is perceptual in many ways, right? And so, distance gives you the ability to have perspective. And so, yes, fundamentally, you need to remediate or relocate, or reduce exposure to the degree that you're no longer having chronic, recurring symptoms, right? So, you can't…the assault must stop. The idea is to train your nervous system and your mind to be able to consciously get to the state of equilibrium on command. And I know that may seem like a huge, huge leap, but that's the goal here, right? In fact, I think that's the ultimate superpower, is to be able to relax on command at any time, in any circumstance. And I think that as a general rule, that would be a good thing for us all to learn how to do, right? How to just be calm, in any circumstance. And so, yes, you need to be separate from it. And I think that's very important.

The other piece is, I think… you know, I credit you with, you know, widening the conversation here about indoor air quality, about mold in general. Because I can't in good conscience, knowing what I know, talk about mold without talking about VOCs in the same breath, because (a) they produce the VOCs. But also, I think mold is kind of like the gateway drug to indoor air quality. People see it, they smell it; they know that there's a problem. You know, it's caused by, usually, you know, a defined circumstance, and the remediation is fairly defined, hopefully. But when it comes to VOCs, that's much more nebulous. And so, nobody calls us and says, "I think I've got a VOC problem."

KS

Kendra Seymour

27:59

Yeah.

JE

Jason Earle

28:00

You know? They call us because they say, "I'm sick in my building, and I don't know what's going on." And mold, generally, is the sort of calling card. And so, this gives us an opportunity to widen the conversation. Because I believe that every building in the United States, unless it's been consciously designed

otherwise, has a VOC problem to some degree. And so, and because we live in these very tight boxes that recirculate the same air, and we, many times, aren't even leaving the building anymore at all.

KS
Kendra Seymour
28:22
Right.

JE
Jason Earle
28:23
You know, we are breathing 20,000 times a day, getting 20,000 doses of man-made VOCs, no matter what. And then, in circumstances where there's a moisture problem adding on to it, and…which many times, I think, is the straw that breaks the camel's back, right? You've been breathing this stuff on a chronic basis, probably getting sensitized along the way, so that when the mold comes, you're already tuned up. And so, you know, there's a lot of things that we need to look at about, you know, not bringing these things into our house, having the right kind of filtration with carbon. There's a lot of different conversations about what could be done. But the bottom line is: I really think it's an important conversation to include this holistically.

KS
Kendra Seymour
29:01
Yeah, you're spot on. I…you know, it's kind of the entry point, I think, for a lot of people. And then, once you start, it's kind of like peeking behind the curtain, and you start seeing all these things and how they interplay. And I know you've done a lot with Corbett Lunsford; he talks about home…chemistry and the home, and how everything works together. So, we're not going to go down that rabbit hole, but you brought up something that I think is a good segue. You talked about testing, and I do want to say one thing before we move on. For anyone listening, if you have mold or water damage and you're not sure where to start, you can head on over to ChangeTheAirFoundation.org and go to our Resource tab. We have a Start Here section that takes you step by step through the process. It helps you find a good IEP; that's the person you're going to bring in first to do a thorough investigation of your home. And then, what does safe and effective remediation look like? And so, I don't want to leave people hanging, but we're not going to get into that for the purposes of this conversation, or we'd be here for like, eight hours. But I want to talk about testing, specifically for VOCs. Because, listen, if I smell a moldy smell, like, do I even need to test for VOCs? How accurate is testing? I mean, is that even something we need to worry about, or should we just move on to "All right, I need to find the source of moisture and the problem, and take steps to remediate that correctly." Like, talk about testing for mVOCs.

JE
Jason Earle
30:20
It's a really good question. And, you know, we tested for mVOCs for a very long time with very mixed results. I believe that the nose is the best test. Unfortunately, sometimes we have a poor sense of smell. Sometimes we also become inured to these things. You know, our human sense…our human sense of scent gets muted within about 30 seconds. So, we're…unlike dogs, which can purge their olfactory receptors at will with a puff of air. So, we don't have that ability. That's why you'll go into the department

store and they'll have you smell coffee or something else, to sort of reset your sense of smell. So, being outside the house for a while is usually a good way for you to do that assessment. I always say, “The nose knows.” And you generally know. People intuitively know when something's sort of amiss in their house, especially when it comes to odor.

The microbial volatile organic compound testing is riddled with problems, quite frankly. And it ranges from the way they're collected, especially when the consumer is doing it, to the way the samples are stored, what temperature they're shipped at, and then, you know, the analysis itself. And then whether you're looking for, you know, the different sort of…the range of volatiles, and there's semi-volatiles, and there's highly…you know. So, it is messy. And the tests that are on the market have failed me many times where I've been in very musty spaces collecting these samples, knowing that they would come back high for a lawsuit, you know, for a legal support, and they came back normal. And so, that does not exactly engender confidence, right? So, I…my strong suggestion at this point is that if you smell it, you have it. The goal, then, is to find the source of the moi…or sources of moisture (oftentimes, there's more than one), and this can be tricky. And the reason it's tricky is because moisture comes in many forms, not just liquid intrusion. Oftentimes, it comes from a source of humidity that you may or may not be aware of, and it may be caused by a ventilation issue, and so many different things. And this is really when professionals carry their weight. A qualified professional is doing a mold assessment, is not really doing a mold inspection. They're doing a moisture assessment.

KS
Kendra Seymour
32:48
Right.

JE
Jason Earle
32:49
And, you know, they're looking…the mold is the is sort of the smoking gun when you find it. And that's like, “Hey, I found it. Great. Now I found mold on the surface. Now I can trick…now I can really find the moisture problem, because that's…I can trace it back from there,” right? So, the musty smell is often the first clue, but it's also a health hazard, right? According to Joan Bennett’s work, it's a neurotoxin and, you know, has all…there's all sorts of really serious issues beyond the cognitive impairment that we talked about. And so, you have to…when you smell it, and like I always say, “If you see something, smell something, or feel something, do something.” And do it quickly, because the longer it grows, the more expensive it gets to remove. And the longer your exposure is, the more likely you can end up with longer-term consequences.

KS
Kendra Seymour
33:33
Yeah, no, all of that is super helpful. And I think this is why I know people…they tend to, you know, if they have a moisture problem, maybe they see it, they're lucky enough and it's visible, or mold, and they jump right to the remediation company. And I tend to suggest that people take a step back and work with a good IEP, a qualified IEP, who's going to do that thorough investigation. Because if… let's say you as the homeowner…you smell it, but you're looking around and you don't see anything. This is where you need the expert, especially with odors. Like, if you talk to a really good IEP, they will say, like, “Oh,

man. Odors are hard to track down," and that's for a number of reasons, right? The way that air moves throughout our home, especially our tighter-built homes, you can have, you know, something in the basement (there's something called stack effect), and the air is moving up. You know, I always think about this stuff, like…if you've ever, like, burned popcorn, or if you're making, like, cookies, and then, you know, all of a sudden, my kids upstairs come downstairs like, "Oh, what did you make?" Right? It's because the air is moving. So, you really have to be a detective to figure out where is this odor coming from, and it always comes back to moisture. And so, I love that you brought that up, that a good inspection, it's about finding that moisture; it's about finding that source.

JE
Jason Earle
34:50
Always.

KS
Kendra Seymour
34:51
Super helpful. Now, because this is super interesting, can we talk about mold dogs for a second and…

JE
Jason Earle
34:56
My pleasure.

KS
Kendra Seymour
34:57
Okay, so what I find really interesting about this…and I've been dealing with mold and indoor air quality for probably 12 years now, or so. But long before some of the bigger groups organized online. And I remember…I've watched over the years as this has become a more popular option for people, are these mold dogs, as a piece of the investigation. And you said something that I thought was interesting, that the not…the dog's nose works a little different, right? They don't, like, fully inhale, like humans. So, talk to us about just mold dogs in general. What are some things that, you know, might want to be on people's radar when thinking about using that as a tool in their tool belt?

JE
Jason Earle
35:40
First of all, it was the best thing I ever did. I had Oreo for…we were in the field for 12 years. I had a fleet of dogs. She was my first one and my last one, and it was life-changing for me and for everyone that she touched. She taught me, actually, where mold hides. Honestly, I got my education, really, from a dog. You know, she would show me where mold hides…where the moisture problems manifest in buildings so effectively that I saw patterns within my region that allowed me to be able to go in and find stuff, even without her. But I would never have been able to have that kind of insight had I not been walked. Essentially, you know, when people are walking the dog, who's walking who? She walked me through buildings and showed me exactly where to drill. And so, I think there's a lot of different things to talk about with dogs, and I'll be as brief as I can, because I know we're limited on time.

But first of all, a dog is one tool. Okay? We always say, “In dog we trust.” In dog we trust, but…trust, but verify, right? So, you know, in other words, when we did inspections, we would first of all do a very thorough physical inspection of the property first to make sure there are no hazards, including visible mold. Because if you have visible mold, (a) it's a hazard for the dog, and (b) it's unnecessary to use a dog. It's visible. So, you know, the best application for a dog is there's an odor, or there's…and/or symptoms, and we don't know where they're coming from. Boom. And you do a very, you know, a very formulaic search pattern throughout the building, mark all the spots where the dog alerts, and then go back through and investigate with moisture meter…you know, closer visual assessment as well as moisture meters. And then we drill holes in the walls, in areas where they alerted, and pull wall cavity samples out. Spore trap wall tracks. And then from there, we could, you know, determine if there was investigative demolition necessary, and these kinds of things.

There are people that are using dogs alone and that are not doing that second step. This is danger zone. You cannot write a spec (in other words, a remediation plan) from a visual assessment. You cannot write one just from air samples. You cannot write one just from dust samples. You cannot write one just from a dog. You have to do, usually, all of them, if you can. And this is where cost comes in. But by the way, a dog will reduce the cost because there's a lot less error. There's a lot less guesswork. “Hey, where am I gonna drill? Oh, should I do here or there?” The dog just put…do you see that wet spot on the wall where the dog's nose was? Literally, Oreo would peg the wall, and I would see these little nose mark, you know? Put the sticker right on the…on that spot, right? And so, we were able to reduce the size of the remediation also. Because we could find exactly where it was and surgically extract it, instead of all these ripping holes in people's walls based upon a dust test, you know, which is highly inaccurate, destructive, unnecessary, and often fruitless. And so, the…so I'm a huge fan of the dogs. I would still have one if I didn't have two little kids and a fast-growing startup, right? I mean, it's just a lot of work. But it, but it was, it's truly transformative. And also, the dog has to be well, me…well, not just well trained. So, I'm a big fan of the Florida Canine Academy, Bill Whitstine, who's a long, long, decades-old friend of mine, of course. But there are a lot of people that are sort of backyard dog training. You know? You got, you got to get dogs that are that are trained and that are recertified on at least an annual basis. That's really important.

KS

Kendra Seymour

39:07

I'm really glad you brought that up. And I feel like a broken record, and this is something I want everyone to understand: that every tool and every test, right, you don't ever make a determination about your home based on any single data point. And you have to understand what a tool or test or dog can and can't do, because there are limitations, there are strengths, and you have to understand that before you go in. And I appreciate you pointing that out, because I think sometimes people say, “Oh no, this is what you need.” And it's about understanding how all of these data points come together to give you that big picture; I like to think of it as a puzzle. And so, when you're working with, you know, an IEP (or whoever it is that you hire), you really want them doing that, like, multi-pronged approach. And I'm glad you brought up that, just like with anybody doing any kind of test, that not all IEPs are created the same; not all dog handlers are created the same. And it's about asking questions and doing your homework to find, really, the best person that's going to help you with this. So, I know that…and I just, I want to bring it up quickly, because I know we're over time. Sometimes people will say, though, like, “What about the

health of the dog?" So, I know you said, if there's visible mold, you're like, "I don't even need it," right? But if…is there health concerns here for the dog? Like, their nose works a little different. Speak to that; you alluded to it earlier.

JE
Jason Earle
40:32
Yeah, there's a few really important points there. First of all, think about a dog and the…when it goes outside. What does it do? Puts his nose right in the soil, right? And it's going right in the dirt, and then the leaves. And you know, all the mold spores in your house, if you've got a healthy home, are coming from outside. That's where they originated. And so, dogs are gonna…dogs have a natural resistance to these kinds of things, except, with the exception of the short-nosed dogs—by the way, we don't use those in detection—and also dogs that are sick, that have a compromised immune system, that are ill. And by the way, those are dogs that are usually in sick homes, or that are old. And so, you know, they can be more susceptible to these kinds of things. So, you've heard about Muffin, who was Ed McMahon's dog, died from mold exposure. Yes, this is terrible. The dog is living in a moldy house, right? And by the way, closer to the ground, breathing probably 100,000 times a day, has five times the exposure per pound of body weight, just like babies do. So yes, babies and puppies (and dogs, rather), pets in general have a much higher exposure rate, so therefore have a higher likelihood of developing serious consequences from indoor environmental issues.

But mold dogs, first of all, should be living at home that doesn't have a mold problem. Number one. Number two: when…we already screened the property, so we're not going to bring them into a place where there's visible mold. Second of all, my Oreo was in the house maximum 10 minutes. Incredible. Big houses. I mean, something…maybe really big houses, we were in there for a while. But her exposure was minimal anyway; I was getting all the exposure. And then on top of it, and I guess the most important thing, is that the dog's nose is designed differently. It doesn't actually inhale the way we do. We smell. We actually have to inhale. They have different chambers within their nose where they can bring in these little puffs and run them past their receptors, and then they purge. That's like a dog go [sniffing sound], right? So that release is actually the purge that allows for another scent profile to be picked up. And then they can sort of, you know, adjust their attack to get closer to the source. And so, dogs have a natural resistance to this stuff. And they're…also their noses are designed differently. And again, a lovingly cared for mold dog will probably be healthier than the average dog anyway. I mean, Oreo was 14 when she died, and she was never sick until the week that she died. And so…and amongst the many, many mold dogs I've known, they've been some of the most healthy and robust pups I've ever known.

Not…and I also mentioned this: They're also the most interesting ones, because they tend to be very involved with people. They kind of understand they've got a job, and they really relish that. And if you ever want to learn more about how dogs respond to this stuff, look up Martin Seligman's work with learned optimism and how he essentially learned about pessimism and optimism through exposing dogs to different experiences. And the dogs that actually had some locus of control, where they were actually able to sort of control a couple things, they thrived. And so, I saw that manifest with our working dogs as well. There's…all dogs are at risk if they're not well taken care of and those things are not adhered to, those very important steps are not taken to protect them. But a well-cared-for mold dog is a…is both safe and effective.

KS

Kendra Seymour

44:01

That is awesome. And I, you know, so appreciate you taking the time to kind of unpack that for a little bit for us, even though we're over time.

JE

Jason Earle

44:09

My pleasure.

KS

Kendra Seymour

44:10

So, kind of bringing this all together. If you're listening to this, if you have that moldy smell (or what we characterize as a moldy smell), I definitely want you to take steps to get that evaluated by a, you know, very knowledgeable indoor environmental professional. Again, you can head on over to ChangeTheAirFoundation.org. Go to our Resource tab, and the very first thing you're going to see is Start Here, and we're going to take you through how to do that. If you don't have a smell, doesn't mean you don't have a problem. You can still…if you suspect there's a problem, if you have unexplained health symptoms, if you've had a previous history of water damage, if you just want to make sure that the air in your home is healthy and that you don't…again, head on over; find that good IEP. Understand that it's a multi-pronged approach. It's not about any single test or any single tool; it's about the whole picture. And we walk you through that on our website. Jason, thank you so much. If people had follow-up questions or want to get into contact with you, how could they do that? Because we'll link to it in the show notes.

JE

Jason Earle

45:05

Sure. So, we created a welcome page for all of your listeners. You go to gotmold.com/changetheair, and there you'll find a copy of our e-book, which is 46 pages of inspection checklists and FAQs. And it's really helpful for people that are early in their mold awareness journey. And then from there, our contact form on our website is a really great way for people to ask questions. And we also take live questions at Instagram; we have a, sort of, an open "Ask Jason" post that's pinned at the top. So, I encourage people to post questions there so that everyone else gets the benefit. And then I'll also do a little shameless plug here. We also just launched the GOT MOLD? Summit. Actually, it's going live February 20th through the 23rd, and so it's gotmoldsummit.com. And a lot of the people that we talked about, that we quoted today, and that we referenced—David Krass and Joan Bennett, unfortunately, Claudia wasn't able to join us. And Carl Grimes, who I think was also on your show. So…

KS

Kendra Seymour

46:06

David Myrick, our remediator, is on there…

JE

Jason Earle

46:09

David Myrick. Yeah, who…

KS

Kendra Seymour

46:14

Dr. Pejman Katiraei is…our medical advisory panel. He's on there. You've got a great lineup there. So, I definitely encourage people to check that out. Lots of great information.

JE

Jason Earle

46:22

Absolutely. Great. So, thank you so much for having me. This has been absolutely fabulous.

KS

Kendra Seymour

46:26

No, thank you. And for everyone listening, if you found this interview helpful, do me a favor. Head on over to ChangeTheAirFoundation.org, and sign up for our newsletter. Because it really is the best way to get great information like this directly to your inbox. We'll see you next time. Thanks so much.