How to Test & Reduce VOCs in Your Home's Air

Interview with Sarah Mack

SPEAKERS
Sarah Mack, Kendra Seymour

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Sarah Mack
00:00
Some of those symptoms include things as simple as a headache, ill feeling. Sometimes it can be skin rash. It can be eye irritation. Longer term, there are some neurological effects that can happen in terms of fogginess, right of brain, or sleepiness, shortness of breath. Long term effects include cancers.

KS
Kendra Seymour
00:28
Welcome back to Your Indoor Air Podcast brought to you by Change the Air Foundation. My name is Kendra Seymour, and today's episode is all about VOCs. Those sneaky, volatile organic compounds that are often floating around our homes, even if we can't see or smell them. We're also going to be talking about formaldehyde and TVOCs, MVOCs, where these pollutants can be found in our home, and how they might affect our health. To help us make sense of it all we're joined by Sarah Mack, whose lab works closely with homeowners and building professionals and others to identify sources of VOCs and help people create safer and healthier spaces. So thank you, Sarah, so much for being here.

SM
Sarah Mack
01:02
Yeah, absolutely. Thank you for the opportunity.

KS
Kendra Seymour
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Now, before we jump in, I want to share a bit of background on Sarah. She serves as the Business Development Manager at Enthalpy Analytical in Mount Pleasant, Michigan. She began her career back in 2006 and throughout the years, she's cultivated countless relationships with indoor air quality professionals and consumers alike, to develop IAQ sampling plans and to understand complexities of their VOC analytical reports. Sarah is a trusted resource for clients and affiliates. Her knowledge and dedication are invaluable when navigating the intricate world of VOCs, their sources and subsequent actions. So like I said, Sarah is a wealth of knowledge. So I promise you, you're going to walk away today from this episode having learned a lot. But before we jump in, I do need to take a moment to thank two of our sponsors. It's their generosity that helps keep our resources free and available to the public. So we so appreciate their support. So a huge shout out, and thank you to Celtic IAQ and Home Safe Mold Inspections of NWA. We truly, truly appreciate their support and commitment, and you know all that they do to help their clients breathe safe indoor air. So if you want to learn more about them, or if you want to become a corporate sponsor, you can head on over to ChangTheAirFoundation.org, and click on our corporate partners tab. So Sarah, let's start with the basics. You kind of orient everyone listening. What are VOCs volatile organic compounds, and how are they different from semi volatile or very volatile organic compounds? And if you can give us a few examples of where these show up in everyday homes.

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Sarah Mack

02:36

Certainly, so volatile organic compounds are chemicals, right that prefer to be in a gaseous state at typical operating temperature, normal room temperature. They differ from very volatile, which are almost always going to be in a gaseous state, the volatile range when we think about things like paint, a lot of the times we catch the no VOC or low VOC concepts, starts it as a liquid, and as that then dries, evaporates, that's what's happening, is that those gasses are then moving from a solid or in that liquid phase out to a gaseous phase. In the semi volatile range, they're a bit heavier. They take a bit more work and a bit more heat to actually move from a solid phase into a gaseous phase. And so volatile organics kind of falls in the middle there. Some of the examples could be benzene, toluene, ethanol, isopropanol. Those are common ones that we see.

KS

Kendra Seymour

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Yeah, and I don't think people realize that your home has VOCs in it, like it just does. And I'm looking around my room right now and I'm thinking, there's so many sources here. My coffee is likely putting off the VOCs, the paint, which, even though I painted two years ago, it's possible, is still putting off VOCS. My flooring, the adhesives, the carpet, the furniture, all of these things are putting off gasses. And we don't always see them, and we don't always smell them, right? So it's one of those things where it's not a matter of, do I have this? It's Yes, you do. It's what kinds, what amounts, and what do we maybe need to do about

that, if anything. So one of the things that you know, if people listening, a lot of individuals, come to us because of a mold and water damage perspective. And when they do, and you kind of start to, like, peel that onion, they start to realize that there are other things in their indoor air, which is why we're talking about VOCs today. And one of the things that I think they hear about, and if you've gone furniture shopping, you've probably seen some reference to this, is formaldehyde comes up in the conversation a lot. So why is it a concern, and where does it typically come from in a home?

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Sarah Mack

04:46

Sure, formaldehyde is actually in the very volatile range. It likes to stay as a gas. It wants to move to a gas very quickly. Formaldehyde is commonly found in glues and adhesives. It's a very inexpensive solvent, additive, essentially, for a lot of those adhesives, which is why we see it in composite wood. But don't be fooled. It is actually naturally occurring and emitted from even hard woods in smaller amounts. And so yes, your hardwood may be better, but at the same time, it still could give off a little bit of formaldehyde. Formaldehyde is actually also emitted from our bodies as part of our just general metabolism system. And then another common source of it is going to be anything combustion. So during that burning process, it's one of the those very volatile compounds that, as things start to break down, it releases and gets down to that formaldehyde level. Now formaldehyde a concern. It's a known carcinogen. It's very difficult to be exposed to none. Even in an outdoor space, you might have 20 nanograms per liter or 16 part per billion exposure. So it you can't get down to zero. Unfortunately, it's kind of like tobacco smoke, known cancer causing, even secondhand, thirdhand tobacco smoke exposure can cause a risk.

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Kendra Seymour

06:06

Yeah, yeah. And I'm glad you brought that up, because we are talking about these things, not just, you know, for the sake of talking about them, because there are known health effects. And various VOCs can impact human health in different ways. And not all of them are bad. They're, you know, as you said, very natural VOCs. I can smell a lemon and assuming, you know, asterisk, maybe I don't have multiple chemical sensitivity, or some of those things, I generally, you're not going to react. But when we talk about formaldehyde, I think one of the things I thought was interesting over the years is when I have had my home tested for VOCs, formaldehyde sometimes isn't included in some standard voc testing. Why is that?

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Sarah Mack

06:45

Well, again, that comes around to the actual chemical size of formaldehyde. It's very small. It does not capture, well, with a lot of the absorbent materials or methods that are out there and available. The formaldehyde molecule actually competes for water molecules in terms of absorbent more specifically, our

our absorbent tubes in terms of how you collect it. So it's very small. It's about the size of a water and or air molecule. It's very tiny. And so unfortunately, some of those methods, even with at home reading meters, it's difficult, and it has a different sensing solution, essentially. So even when you get just a VOC scan, it may not include formaldehyde as part of that.

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Kendra Seymour
07:26
Yeah, and that's something we want people to be aware of, and we're going to talk to you about, we'll go through, like, how you can test for it and who you want involved, but it's just something to be aware of that you may have to add it on or or look into it separately. So you know, as I said, we know not like all VOCs are equally harmful, right? They don't all impact us the same way. But what are some of the most common VOCs your lab is seeing in residential testing, because you guys, you know, analyze reports for 1000s and 1000s and 1000s of homes. So it's super interesting to me. So what are the biggest sources that you guys are seeing in the home?

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Sarah Mack
08:01
So for the most part, across the board, some of the biggest ones that we're seeing are actually ethanol, isopropanol and acetone. And because I've been with the company for a while, we saw a really huge uptick with that. Actually, with COVID sanitization, our cleaning habits changed and they increased what we have in our homes to to fight off virus, right? And so with that, ethanol, isopropanol and acetone are typically the ones that we see in high concentrations. Those are going to be from your cleaning sprays, your cloroxes, your lysols, disinfection in general, as well as your hand sanitizer. The other bits that kind of come to and fro are going to be items that are involved in maybe an attached garage. So we think about stored paint cans, creating VOCs. Yes, they're closed, but they're not fully sealed. You come back to that paint can a few years later, it will be dry. And so essentially, the paints some of the cleaning products that you might have in a garage, break and parts cleaner, something for degreasing, cleaning products, I think of oven cleaners maybe, or tub and tile cleaners. Those are going to be the unfortunately, they can have some extra VOCs to kind of really get the nit and grit out?

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Kendra Seymour
09:21
Yeah, yeah. And I'm glad you mentioned that, because I feel like that's a very accessible point for people, something they can start to make swaps and changes for today, because clean shouldn't have a smell. We are almost like trained to think that I need a lemony pine scent. No, no, no. Like that is not natural. Clean shouldn't have a smell, and soap and water is very effective an unscented, non toxic dish soap, hand soap is very effective at cleaning just about everything. And you don't need a separate product for your bathtub

that you do for your, you know, countertop and things like that. And so in this case, I think that is a real starting point. And one of the reasons I'm glad you brought that up too. I've always thought about, particularly because I have school aged children, you know, the last few years, they're like, every kid has to bring in a thing Clorox wipes at the beginning of the year. And I'm thinking about these tiny spaces, these young bodies, and there's 30 of them, and they're, you know, I get it. They're trying to reduce disease transmission, and children are germy. I My this, this this winter has been rough. I feel like we've been sick like every other month with something, but it's one of those things to be cognizant of and see. Can we make better choices? Because your lab is seeing the repercussions of that long after, I'm sure the the lemony scent has faded, it's still there and it's still with us. So I'm really grateful you brought that up, and for other people listening, we have, I do want to mention we've had other talks with Andy Pace, multiple interviews Lara Adler and others on VOC. So this is not something we're talking about once, but you can really get a deep picture in terms of building materials and healthier swaps with them. But okay, so I want to talk to you because I do have, as an indoor air quality nerd, I have some various monitors that I've gotten over the years, more or less just out of curiosity, and I know that some of the consumer grade air monitors that maybe people buy, they show something called TVOC So can you explain what TVOCs are and why that number may not like tell us the full story about our home.

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Sarah Mack

11:23

Certainly and so that is a total VOC. It is a calculation based on what that monitor is detecting, essentially. And it is a total it does not tell you those individual compounds. It's very important, what those individual compounds are. You think of a good illustration, I guess?

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Kendra Seymour

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Well, I think you brought it up before, like, I want to know what specifically is in there, so then I can trace it back to the source. So if I'm seeing something, you know, and you tie that VOC to paint right, I'm going to, instead of storing those 12 buckets of half used paint in my basement, I might recycle them or, you know, move them out, you know, to an outdoor shed or something, if I'm insistent on on keeping them right. I mean, with that, that, to me, seems like I want to know not just what the problem is, but where, so I can solve it.

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Sarah Mack

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Certainly and I kind of, I guess I, I gravitated towards, like, milk in your refrigerator, you can have a half gallon and you can have a full gallon. So you have a full gallon and a half, but if your full gallon is completely rotten, do you really have a gallon and a half of usable milk, essentially, I guess that's the best

thing I could think of right off hand is that it matters what's in there, yeah. And so if you have a total VOC of 500 and half of that is formaldehyde alone a known carcinogen, or benzene alone is a known carcinogen. That's super toxic. But if you look at it just from the total VOC standpoint, it wouldn't be because 500 is pretty normal for indoor spaces. Even some of the green building certifications request and say, please get to below 500 but that's the marker that they use. Again. What is in that soup makes a big difference,

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Kendra Seymour

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Yeah. And I think another example that some of our listeners probably relate to is sometimes they'll see if they've had any kind of mold testing done, like a total spore count, and they think, oh, that overall number doesn't seem that high. And we say, we need to go further, because the types of molds and their amount matter, and they tell a story, right? So if I have a small number, but most of that is Stachybotrys or ketomium, or some of the other ones like, that's a clue that, wow, we maybe have some prolonged water damage here. So it's about, you know, not just getting the data, what it tells us what, what we can do with it. So you, you mentioned you started talking about threshold. So are there any legal limits or health based guidelines for voc levels, indoors?

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Sarah Mack

14:08

In occupational settings, right in some of those regulated ones that we have for OSHA or NIOSH? Yes, your residents, unfortunately, no, there really isn't. There are suggestions for improving your indoor air quality overall, to get below certain concentrations. But nothing enforceable. Unfortunately, that also means for apartment dwellers, condo associations, you you don't really have anything you can kind of stick your feet into all the time to say that you have to be below this. But there are certainly suggestions and guides, or health based suggestions, like I had commented to that 500 or less kind of what's normal, what's abnormal in a space some of the individual compounds do you have, what's called an EPA reference concentration available, not every compound will have that the EPA referenceconcentration is considered a an amount that you can be exposed to in a residents chronically, long term before you would start to have some ill health effects. And essentially, that's not acute, but long term health effects. And so sometimes you can find an EPA reference concentration for compounds that says, Okay, if you're above this, then you really maybe should look at to sources removal and improvement of the indoor air quality. One that I can think of right off hand all the time is benzene. Benzene from the EPA reference concentration is set at 30, um 30 nanograms per liter, technically, yeah, per microgram per meter cubed, essentially. So if you're above 30, that's where they say, Hey, you could have some long term effects that would happen.

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Kendra Seymour

15:49

So what? What are some of the likely sources of benzene, like in our homes? What products is that coming from?

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Sarah Mack

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A lot of the times it's associated with building products. But benzene is one of the primary component units in fuel, petroleum, yeah. And so anything that has a petroleum type base, benzene is certainly common.

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Kendra Seymour

16:09

Yeah. And I don't think people realize, you know, when you have an attached garage and, you know, you think you close the door and that's an unconditioned outside space, that air does enter your home and it can impact your health. And so that's just something to be cognizant of. You know, I get the allure of an attached garage. I lived many years without a garage at all. And you know, you're getting rained on and snowed on, but there's some trade offs and some things to be aware of in these situations. So while I know you're not a doctor, let's talk symptoms. So what are some of the just kind of general health effects that show up when maybe VOC exposure is particularly high? You know, I'm sure you've talked with people, some people are more sensitive than others, so I know you know, this really is individualized, but can you kind of give us some common or general health effects?

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Sarah Mack

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It is so very individualized. Some people can be exposed to a lot of VOCs before they experience any of the outward type symptoms. When I talk health, what I come back around to a lot of the time is actually our body's ability to rid of toxins. So when we think about it, our body has processes in place that can actually get rid of a lot of those toxins. Some people can tolerate, you know, just a very like a half cup worth. Some people can tolerate five gallons worth of toxins in where their body starts to say, hey, whoa, whoa, we can't process anymore. And so those symptoms start to manifest once you heat hit that kind of peak that your body can process. Some of those symptoms include things as simple as a headache, ill feeling. Sometimes it can be skin rash. It can be eye irritation. Longer term, there are some neurological effects that can happen in terms of fogginess, right of brain or sleepiness, shortness of breath. Long term effects include cancers, mutagens, I guess, teratogens as well. You know, in terms of long term health effects for growing

bodies, so exposure for kids is certainly something that we want to be mindful of, because it can have a lasting and long term impact.

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Kendra Seymour
18:26
Yeah, no, absolutely. And we'll try to link to some research that talks about some of the varying symptoms for those who want to do a little bit deeper of a dive. Now your lab and we'll we're going to everyone listening we're going to look at some some sample stuff, so you get to see what VOC testing actually looks like, if that's something you plan to do. But there, there are something. There's something called MVOCs, Microbial VOC. So what are those? And how are those different from VOCs that we've been talking about?

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Sarah Mack
18:55
Sure. So as a VOC, they are gaseous, right? They want to be in that gaseous state. So M in MVOC stands for microbial VOCs. And what ultimately that is, is a slightly different way to look at mold growth. We have the spores, we have the mycotoxins that you can look at, but then in a similar fashion, we have what are called microbial VOCs. Microbial VOCs are the gasses that are emitted as molds are actively growing, just like mycotoxins. Not all molds necessarily give off mold VOCs, but there are gasses that could be indicative that you have a hidden mold problem. You know, of course, if you can see the mold, we want to take care of that, but that's where some of the testing, that includes the mold VOCs can help for hidden type stuff.

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Kendra Seymour
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Yeah, and for those listening, we have a couple episodes just on MVOCs with Jason Earle and Dr John Bennett. We'll link to those for those who want to do a deep dive into MVOCs, because it's a whole fascinating talk in and of itself. So if someone were to get their home tested for VOCs, and we've done a lot of episodes through the foundation about this topic, so I think people are going to be thinking about it, what does that process look like? And what kind of information could they get from a lab, you know, report, you know, and what should they be looking at when they look at the results?

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Sarah Mack
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Sure, again, TVOCs aren't all the same, so there's some differences in how those are actually calculated. And then just being mindful of what actually your end result results or report would look like. Ourselves, we have a do it yourself kit. It's a little bit more simplified. It takes and gives you that total VOC as well as a total mold VOC, kind of breaks down, not the individual compounds, but puts into categories based on

algorithms we've developed, what those VOCs are likely sourced from. So if you have so much of chemical A, B and say M, then you have paint. X, Y, and G equals personal care products, or it's moth balls or something similar. And so when you're looking for a report, it's certainly ideal to know exactly what you're going to get in the end, because not all laboratories, not all reports are necessarily the same. The testing process is is quite simple. We, again, do have a do it yourself kit, easy to use. Our laboratory performs VOC testing with what's called a thermal desorption tube. It's about the size of an ink pen barrel or whatnot, with some activated sorbent in there, activated carbons that capture the chemistry and the chemicals as the air is drawn through there. There are some passive sampling options out there. They're going to be a little bit more limited into what you can actually report in the end. Passive samplers, each of the different chemicals have a different uptake rate, so you have to be mindful of that. And then I do know there are some labs that can do it with a small, whole air grab, or a small summa canister, essentially, of sorts, that they can actually collect and do a voc from.

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Kendra Seymour

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Yeah, well, and that's what I like about your lab. This is something that people can do alone, but we do, and I know you guys do this to encourage people to work with a really knowledgeable professional, and indoor environmental professional. And if you're not sure how to find someone, first, I'll go say, once again, I sound like a broken record. Not all IEPs are created the same, which is why you have to vet carefully. So if you head on over to ChangeTheAirFoundation.org, and go to our resource tab, the very first thing you're going to see is start here, and you go to Step one, and we have all the information you need to find a good IEP near you who can help you do this and and one of the things that I love about your lab is you're not just testing for it and breaking it down, is you do pinpoint probable sources of that, because the last thing of homeowner or renter wants is, okay, great, this is a problem, now where, which is why you know your lab, what you do, and working with a good IEP, I think is is so important. Are you able to share with us, like a, like, a screenshot of sample lab report? Or,

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Sarah Mack

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Yeah, yep, I am. And actually, I'm going to kind of start back at the beginning. You wish commented to some of the data, right, and making it digestible, that's one of the hardest things. And I can tell you myself, I am not a chemist, far from it, and but over the course of the years, I've really started to understand some of the chemistry. So our our laboratory will take complex data, very complex data, as you can see here on the the screen. These are just simple peaks, but they'll take that data, and they actually move that information by taking what types of chemicals they are, and again, through our algorithms, finding those sources and the potential so in our development of this test and the contamination index, as we call it. Over the course of the years, we have tested a ton of personal care products, indoor home type things that

you would use so that we could make those algorithms and make those changes, essentially, where they're coming from. Some of the reports might look like you see here, I've got a couple of quick snippets the total VOC concentration. This one didn't necessarily have a mold VOC, but then the contamination index, so taking this total VOC concentration of 2400 nanogram per liter, and then outlining where those are coming from. So we can see with the color coding the light hydrocarbons, is what we would consider a high concentration. Our coatings and our alcohol products were in about a moderate where everything else seemed to be in what would be considered a normal range throughout the home.

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Kendra Seymour

24:51

Yeah, I'll jump in for a second, because those listening on podcast, you can go over to the YouTube our YouTube channel to see it, but it's broken down into three categories, which I love, building related sources is one category mixed building and lifestyle sources, and then the third category is lifestyle related. And underneath each like, you're giving examples, coatings, paints and varnishes, cement, gasoline, all sorts of different things. So people can start to understand like, oh, that's where it is. And I love the color coding, because when you're looking not being a statistician and things like that, I love that. It's like, red, green, yellow. I understand what that means. And so I think very accessible, you know, for a consumer, because sometimes these reports, you look at it and it's Greek, right? You have no idea what they're looking at,

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Sarah Mack

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Certainly and again, I'm not a chemist myself. It's taken me quite some years to really kind of understand where a lot of these things can come from. With that simplification, we don't just leave it as to if you're in a normal, high, moderate, whatever the case may be. As you go through the pages of the indoor air quality report, which typically can be anywhere from eight pages to 12 pages, you'll actually see breakdown so our light hydrocarbons, example here in the high range, we give a definition and some of the potential sources. So we break that down even more, seeing that it can come from building materials, aerosol cans, fuels, refrigerants, natural gas, blowing agents, propellants, and provide some steps and some tools as to what to do next. So recent renovation or construction may have increased those levels to help get rid of them, increase your ventilation during after, during and after use of these products. And although they don't necessarily typically represent a chemical or a significant health impact, their present presence could indicate some bigger problems, like a leak in your AC and leak in your refrigerator. And so we break that down into more detailed information now, those two pieces your total VOC the categories, as well as kind of breaking and giving descriptions for each of the groups, that's something that's readily available from our direct to consumer option, also up here on the screen, and one option we do have when you're working with an IEP to really help you understand your overall indoor air quality. VOCs are just a small portion of what your indoor air is, has in it, and what it can the concerns are, and all of those different things with an

IEP or with one of our sampling professionals. We work with not just IEPs, but a multitude of sampling professionals and indoor air quality specialists across the country, but what you can do with them, and what we've reserved for that is actually chemical specific details. So not only do we categorize it for you, but then we also look remember how we said that TVOC matters because it matters what's in it. This example here that I have on the screen that viewers are actually able to see the isobutane. So out of that 2400 nanogram per liter, the isobutane compound itself was the highest concentrated detection at 1300 that's high, that's huge. And so that's a large part of the overall sample, which would give us that indication in that light hydrocarbon range that something's wrong. Where, if we have something that the highest concentration compound was at 100 you know, and it was relatively safe, safe in a less risk, least risk, I guess you could say then that's something that we would be overly concerned with. We would just do an overall dilution to get that total voc concentration down. But once you actually use one of the IEPs, the affiliates, a sampling professional, we do offer that individual chemical detail, going into a little bit more detail, even when we have the individual compounds, we can provide cast number as well as ppb concentrations to compare with any exposure limits that might be out there, or comparably the EPA reference concentration.

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Kendra Seymour

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Yeah, yeah. And I kind of, I know this is a lot of the numbers, and people are thinking, like, really? Like, how is this that big of a deal? And I want to give people an example of how this may be an issue. And you have no idea there. There's a woman I had the opportunity to meet, and she had been having a wide variety of symptoms, as had her family, and they did have mold and water damage, which they were pretty confident they addressed safely and effectively, but on certain days, they were having a resurgence of symptoms and migraines and things like that. But it wasn't consistent, and they couldn't figure out why. They had a whole slew of IEPs come in. No one could figure it out. Eventually, one IEP said, Hey, do you have privacy film on the windows of your front door? So sometimes, like my windows, they have the slits going up and down the side, you can see in and out. And I don't love that, but I haven't done anything about it. Well, they had that, and so they bought cheap online the film that you put over, and it makes it, you know, so you can't see through anymore. Well, when the sun would hit that film from the outside, it would cause that material to off gas. And what it was off gassing was creating symptoms, but because it wasn't sunny every day, or it wasn't hitting, they weren't having reactions every day. It made it that much harder to pinpoint. And he said, Hey, remove it. Well, they removed it, and guess what? All their symptoms went away. And it was something as small, like an off chance. Oh, I, you know, I want to, I want a little bit more privacy. I put that cheap, $15 film over the window so people can't see in, and it was creating a host of issues. And so it's these little things that we don't always think about. And I think that's why it can sometimes make it tricky to pinpoint exactly what the source is and where. And so this is where being a good detective, working with a knowledgeable professional, and you kind of go through like, a process of elimination, but good

data and information, like what you guys provide, and things like that, can really start to clue people in. Like, I think we have a VOC issue here that maybe is impacting and let's see what we can do about it. So,

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Sarah Mack
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Like, the most fun detective work, I promise.

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Kendra Seymour
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Yeah, and it's, it's, you know, I, I know I've been at this for a long time, well over 10 years, and I know the trauma and the feelings that come when you're really in the heat of it or thick of it, and working your way out, but then you get to a point where, and I think there's a silver lining here, if you are dealing with environmental stuff, is you will start to live more consciously and with a greater level of awareness, and you start looking into all of these things, and in a way, you know, it doesn't become as overwhelming, it becomes empowering. Because you think, okay, what can I do to minimize my risk or minimize my exposure, to improve my air quality? And so this is a good segue, I think then. So let's say someone gets this report and they find out, wow, we have some elevated VOCs. Like, what can they do about it? Are there practical steps that people can take to reduce their exposure?

SM
Sarah Mack
32:12
Absolutely, so one of the we kind of have the big three, we call it, we remove, dilute, or remove, container, dilute, essentially in terms of VOCs. So we remove it's going to be very common for a lot of other types of indoor air contaminants. Remove the source, if you can. I myself am guilty of keeping nail polish around that I haven't used in a year or more, right? Get rid of it. We talked about the paint cans, some of those things, if you have a source that you find and identify and it is something you can part with, suggest doing. So keep it simple in terms of how much can actually be off gassing in the indoor air. Also, that includes individuals. I've had, I've talked with a number of people that, over the years, have worked on, like the couponers, you know, where you can get five things of Clorox wipes for cheaper or a bigger discount, essentially. But then just remember, each of those individual containers is still off gassing while it's in your possession and inside of the building space. So remove it, if you can. Now, some things aren't as simple. It's hard to remove the paint you just put all over the wall in every room. Sometimes you can contain it. I know it sounds kind of funny with some paint, it may be something where you contain it by putting on some type of a sealer or a coating that helps to minimize the amount of off gassing that's actually happening. There's some caution with sealing things, I think because you're just kind of slowing that off gas process and potentially, and if you're not working with the right people could be adding a lot more VOCs and making a bigger mess. But if you're mindful about it and doing the ceiling for some of those bigger things, or maybe

kitchen cabinetry, you just got brand new, custom kitchen cabinets or a new bookcase, right? Sometimes you can seal those versus actually removing them. Smaller items, when we talk about contain, that could be your cleaning products in an airtight container, and then not in your living space. Can you put it out in the garage, but then also being mindful about air moving in from the garage, opening that container out there, making sure that you're actually ventilating when you're in use, and then that moves into that dilution process. So yes, I'm not saying that you cannot sanitize your house. I'm not saying please don't shower with cleaning products or whatnot. You can, and you absolutely can, but it's understanding and knowing okay if it is a necessary product and a necessary item to be able to do you have to dilute it right? Some of the new homes are extremely energy efficient, which I'm all for, saving energy, but at the same time, you kind of lock yourself in with what's there, that includes any moisture that you create during cooking or showering. That includes any VOCs that are emitted from new products that you bring in from cleaning day. And so dilution can take a couple of forms. It could be just natural ventilation by opening up the doors and windows. Some places like Florida, opening the doors and windows is a sin. We do not want to bring in mold spores and all the extra humidity. So what you might do is actually put in some type of air purification that would capture similar to our sorbent material, but that would actually capture the chemical out of the air. And so then, in the sense, is diluting the amount that's present.

KS

Kendra Seymour

35:33

Yeah, and you're absolutely right. And I'll point some people to some additional resources, because I always want people to feel empowered, right? And that they can go and find reliable information. So, yes, source removal 100% is always think about what you buy. You know, replace some of those products, toss the ones you're not using. Be really intentional. You had mentioned things about paint all three episodes with Andy Pace we talk about that, kitchen cabinets paint and things like that. So we link to those. Not all of them are out yet, though, but the first two will be but you'd mentioned improved filtration, and so I think it's worth noting here, because we talk about a lot about HEPA filtration being really great for particles and things like that, super important. But for VOCs, you that's not going to be met with a HEPA solution. So you're going to need a filtration that has a carbon or similar component to remove those gasses. So just be aware of that if you are looking to remove VOCs, and we have a great interview with Carl Grimes that breaks down the difference if you want to check that out. And then, of course, ventilation, I'm glad you brought that up. So there, there is natural ventilation, like opening windows, but you have to be mindful. And there are other mechanical ventilation, ERVs, things like that. We have a great interview with Corbett Lunsford from our summit that will link to and we're going to be unpacking that a lot more this fall with our HVAC Mini Class series. So this is never a one thing. It can be a multi pronged approach and solution, which I like, because some points are more accessible than others. Some you have to plan for but there are steps people can take today to improve there in their home. Sarah, this has been wonderful. Thank you so much for being here. If listeners want to learn more, have questions about VOC testing or your lab, where can they find more about you guys?

SM

Sarah Mack

37:26

There's a couple of different places I had commented and mentioned about our do it yourself option, it's probably the easiest website to comment. It's homeaircheck.com so homeaircheck.com all spelled out. That's our Do It Yourself option on there, you will find some of our enhanced services that work with partners like Michelle Iverson Andy Pace, and then others on the website Terry Wright and his Pure Air Pure Water. So those would be expanded options for individuals looking to do extra testing. And then, of course, our Enthalpy website, which is E, N, T, H, A, L, P, Y.com, enthalpy.com So Enthalpy Analytical, we have an indoor air section that'll get you closest to my inbox. Let's put it that way, and then you can also email me. My email is Sarah with an H period, Mack, M, A, C, K@enthalpy.com.

KS

Kendra Seymour

37:38

yeah. And I'll be remiss, and I completely forgot to mention this, your company was so generous. You guys actually sponsored our 2023, Summit. We'll link to that. You can see some of this stuff. And so thank you again, not for today, but also for that, because it's it's so wonderful to see companies who are really not just doing the work, but like changing the way that we think about the air in our homes so that we can all be healthier. So thank you again. Appreciate it.

SM

Sarah Mack

38:57

Thanks Kendra

KS

Kendra Seymour

38:59

For everyone listening. Do me a favor if you found this interview helpful, head on over to ChangeTheAirFoundation.org, sign up for our newsletter, because it really is the best way to get great information like this, tips, free resources, everything directly to your inbox. Thanks so much. We'll see you next time you.