EP\_1209\_BEST\_of\_Biohacking\_Your\_Home\_AUDIO

[00:00:00] **Michael:** It doesn't matter how efficient we are, if we're all dead. If you want to know if your air quality is good, [00:00:05] stop testing your air, start testing your dust. Over 50 percent of the global population deals with at [00:00:10] least one chronic condition. Go to every room in your house that has an air

[00:00:12] **Dave:** freshener and throw it away.

[00:00:15] That's usually an indication that you have mold spores in your air. This is the first month that the U. [00:00:20] S. government has outlawed the only type of light bulbs that are good for you. Our government has [00:00:25] completely given up on any kind of standards that are around human health. They are not your friend.[00:00:30]

You're listening to The Human Upgrade with Dave Asprey.[00:00:35] [00:00:40]

I will not buy a fabric couch. And there's a couple of reasons for that. [00:00:45] One is you usually breathe a lot more of whatever foam is in there. And the other one is it's a [00:00:50] huge dust cloud and it's usually a flame retardant. Leather couches are the way to go [00:00:55] because you can wipe dust off leather. And when you jump on a leather couch, you don't see a cloud of dust unless you just didn't [00:01:00] dust it with a cloth.

So for air quality, that and carpet seem like the [00:01:05] worst things you could ever have in your house if you wanted to live a long time. Am I off base on that? No, [00:01:10] you're not off base at all. I mean, I purposely don't have wall to wall carpets [00:01:15] anywhere. If I ever get carpets, I get small little area rugs as a decoration and [00:01:20] I, I try to get ones that are washable.

[00:01:22] **Michael:** Just to make, you know, the cleaning process as easy as [00:01:25] possible. I also don't have these long threads. Where it just acts like a sponge you know, [00:01:30] you got to start making these decisions. Like you said, leather couches that you can clean, [00:01:35] less fabric, less carpeting. This is going to help with our air quality in our home.

[00:01:39] **Dave:** And if [00:01:40] you want to get really sick, really fast, go to a thrift store and buy a fabric couch. [00:01:45] The chances of that being moldy are like 99%. I would agree. [00:01:50] So, the, the big takeaway [00:01:55] so far is that if you've had mold in your house, even if you had the drywall taken out and all of [00:02:00] that that you need to go through and micro clean everything, I'm [00:02:05] assuming with a HEPA vacuum cleaner,

[00:02:07] **Michael:** HEPA vacuum cleaner, microfiber [00:02:10] towels, and, you know, like botanical solutions are probably the best thing to do, you know, [00:02:15] to wipe things away.

[00:02:16] **Dave:** Like ECOS

[00:02:17] **Michael:** probably. EGOS is great. You [00:02:20] know, there's so many products out there, it's hard to keep track of, but any botanical disinfectant that [00:02:25] you like is going to be sufficient to remove the byproducts of mold. I think it's [00:02:30] also a good

[00:02:31] **Dave:** habit to have a dust cover on your [00:02:35] mattress. one that's waterproof.

Yeah. That way you're not going to be getting [00:02:40] dust and if your mattress may have had some stuff on it, you're isolated from it. And I've done [00:02:45] that for many years. It's less likely to get damaged in a moldy environment and it's less likely to cause damage [00:02:50] to you if it has mold on it. Is that good advice?

[00:02:52] **Michael:** Oh yeah, I just literally made that same recommendation to one [00:02:55] of my clients earlier today. I mean it's, I think it's protecting your mattresses is a sound investment. [00:03:00]

[00:03:00] **Dave:** What percentage of illness do you think is caused by environmental air [00:03:05] factors?

[00:03:05] **Michael:** Really great question. So according to the Cleveland Clinic, you know, disease is caused by [00:03:10] four major contributors, viruses parasites, bacteria, and fungi, [00:03:15] which obviously part of mold, mold is a mold is part of fungi.

You know, it's interesting [00:03:20] because over 50 percent of the global population deals with at least one chronic condition. [00:03:25] So, that is astounding. 80 percent of the homes in the U. S. based upon a [00:03:30] study done by John Spangler in 1994 had a history of, sorry, 50 [00:03:35] percent had a history of water damage, 80 percent of those had a history of mold.

So, that tells you [00:03:40] that, you know, if I'm looking on my street right now, Every other house, at a minimum, [00:03:45] has mold. And that's alarming. So if we start to add all these statistics together with 20, 000 [00:03:50] breaths per day, I mean, I have, I have to think that at least 50 percent of the global [00:03:55] population is dealing with environmental toxins and is suffering because of it.

[00:03:58] **Dave:** It's not just mold though, because [00:04:00] I promised listeners that we were going to talk about air quality in general. [00:04:05] Formaldehyde is an issue. My my former wife trained at medical school [00:04:10] on cadavers and she breathes so much formaldehyde that she got sensitized to it, [00:04:15] probably via mast cells, come to think of it.

And from then on, whenever we would go [00:04:20] somewhere that had high levels of formaldehyde, like a mobile home or something, or an [00:04:25] RV, she would just get severe reactions, like disabling reactions, like drops in [00:04:30] blood pressure and stuff like that, just from formaldehyde. Tell me about formaldehyde or [00:04:35] other VOCs and other toxins that are in homes and in home air specifically.[00:04:40]

[00:04:40] **Michael:** Yeah, so formaldehyde's a big one mainly because everything that we buy these days [00:04:45] comes into our house in two days. We have no idea where it came from and a lot of the [00:04:50] countries that we buy these products from don't really regulate formaldehyde nearly as [00:04:55] much as, let's say, Canada, for example.

And so, a lot of our stuff contains high levels of [00:05:00] formaldehyde. perpetually off gas into our environment, essentially creating these tiny particles [00:05:05] that we breathe in with every breath that we take. And this is everything from baby furniture [00:05:10] to, you know, wood floors, you name it. So all of the stuff we fill our, [00:05:15] our house with Unless you specifically know to get formaldehyde free versions of things, [00:05:20] you know, you're going to have it.

I'm pretty sure even there's formaldehyde in the magic eraser you know, I [00:05:25] mean, this is, this is the kind of breath that we have here. And it can create a lot of issues. I [00:05:30] mean, I once saw this woman, which was in Brooklyn, New York or Queens or something to that effect. And she [00:05:35] had literally red skin, you know, head to toe, crazy rashes [00:05:40] and stuff.

And we found just crazy levels of formaldehyde in her place. You [00:05:45] also have VOCs. That's another, it's like, it's almost like the cousin of formaldehyde because [00:05:50] if it doesn't have formaldehyde, it's probably got some other VOCs you don't want.

[00:05:53] **Dave:** And that's a volatile [00:05:55] organic compound. What are other examples people have heard of?

[00:05:58] **Michael:** Okay, so with [00:06:00] volatile organic compounds the probably the best thing to register this would be when you paint. [00:06:05] So you paint a room, right? That smell that you're smelling is actually the [00:06:10] VOCs that are coming off the wall as it cures. You know, there's anything with [00:06:15] adhesives, bonding agents, is gonna have VOCs.

So, You maybe you got a [00:06:20] brand new vanity from, you know, some store yesterday and you're installing that. Well, [00:06:25] they're going to have adhesives that glue it all together. That could be off gassing for a while, [00:06:30] caulking, silicone, things that we use inside of our homes all the time can contain high levels of [00:06:35] EOCs, plastics lots of plastics and stuff like that can off gas carpeting.

[00:06:40] Carpeting has high levels of EOCs if you put in new carpeting. So, yeah, it's, it's kind of all [00:06:45] around us and creates another barrier to poor air quality or having good air [00:06:50] quality. And then we, you know, with, with that, uh, mold also produces VOCs called MVOCs. [00:06:55] Um, so if you have, you know, mold and bacteria and [00:07:00] VOCs and formaldehyde and all the amazing things that we have out there in the [00:07:05] environment you know, we really create this situation where it's this perfect storm, we're [00:07:10] overloading our immune system and we're paying the price for it.

People often ask me all the [00:07:15] time, you know, why is this becoming such a problem today? You know, mold's been around [00:07:20] forever, you know, uh, we've been breathing inside of spaces forever. And, [00:07:25] you know, I think we have a little bit of amnesia there a little bit because obviously there's, we've been [00:07:30] living a little bit longer here and here.

Actually last year was the first year that. Our [00:07:35] longevity declined. You know, when I look at this, if we look at the history of what's going on [00:07:40] here, back in the 1970s, we had Richard Nixon in office Richard Nixon [00:07:45] and, you know, China and Russia, they're all getting together and they start this feud [00:07:50] about energy efficiency.

And this is where I think we really just. We, [00:07:55] we executed before we looked at consequences. Since then we have made several strides [00:08:00] forward in energy efficiency. And like you said earlier, I mean, we're, we're, we're absolutely [00:08:05] trading energy efficiency for health right now. And so it doesn't matter how efficient we are if we're [00:08:10] all dead, right?

You know, when you look at all of this, it's, it's the craziest thing. We [00:08:15] seal these buildings with spray foam, top to bottom. It's the new thing. Why is why spray [00:08:20] foam? You get the better R value per square inch. Okay. With that being said, there's [00:08:25] no fresh air exchange. You know, our homes have historically.

Breathe really [00:08:30] well. You had used to have these walls that would actually, they're pretty Like a balloon frame. So you would [00:08:35] have a wall chase in between your interior and exterior wall that would go all the way up and down. [00:08:40] They got rid of that. We're starting to build them tighter. And then it just went worse switching from, [00:08:45] you know, regular installation, like fiberglass or wool to.

Spray foam. [00:08:50] And even in attics, like if you understand building pressurization, air is going to [00:08:55] rise. So when humidity comes into, into play, because it's summertime, let's [00:09:00] say, that hot, humid air is going to rise, and it's going to get trapped in the attic. And [00:09:05] typically, when you look at these homes, the way they're designed, You got no ventilation in the attic because they're [00:09:10] spray foam.

So all that humidity just stays there and just fills the house like a balloon. And then what [00:09:15] else do we get? Well, mostly our HVACs are in the attic in these designs. And so [00:09:20] now we get mold growing and bacteria growing in our attic. Now it's sucking into the HVAC and [00:09:25] spreading out across the house. And then we wonder why, you know, we're not feeling so well.

And. [00:09:30] Nobody's even talking about it as a, as a big problem. It's, it's a very [00:09:35] small few people like you and me right now.

[00:09:37] **Dave:** I would go so far as to say that [00:09:40] that cheap energy is fundamental to human freedom and human health. [00:09:45] Because if you can't afford to heat at home that has proper circulation, so you don't [00:09:50] get mold and bacteria growing all over the place, uh, you're going to get sick.

And when [00:09:55] we talk about freedom, if you're sick, you have no freedom. And if energy is so [00:10:00] expensive that you can't drive to the store, then you have to walk to the store and you just [00:10:05] lost your entire day. So I'm a huge fan of whatever is going to give us, [00:10:10] And I don't actually care that much about carbon dioxide because I know we [00:10:15] can hack carbon dioxide.

All we have to do is restore cows and soil and for [00:10:20] it, it's just not useful to build a home [00:10:25] that has a slightly lower bill. To the electric company, but you're literally talking [00:10:30] about tens of thousands of dollars that are going to go towards healthcare as a result of that. It just doesn't make [00:10:35] any sense, but people haven't seen the connection yet.

So I'm all about [00:10:40] reducing chemical poisoning. And we have to do that far ahead of [00:10:45] fixing the CO2 problem. CO2 is long term right now. They are spraying poisons in your [00:10:50] home and on your food, and they're putting it into the walls of your home. And it's growing [00:10:55] there from mold. That matters right now. And if we ignore that for a long term [00:11:00] goal, you have to ask who's directing that because it doesn't make any sense.

[00:11:04] **Michael:** It doesn't [00:11:05] make any sense. It's, you know, it's, it's, it's trading. It's trading one thing for another that we [00:11:10] just can't afford to trade. What do we do about VOCs in our hubs? So, I [00:11:15] mean, I have around the house a bunch of air filters with charcoal in them that [00:11:20] are HEPA and some ionizers and some other various [00:11:25] random air filters.

[00:11:26] **Dave:** I'm kind of an air filter fetishist at this point. I live in a seven year old [00:11:30] home too. So what works best?

[00:11:33] **Michael:** You know, uh, when people do like [00:11:35] remodels and they're really sensitive to VOCs and they just couldn't afford to use like [00:11:40] VOC free alternatives and things of that nature, we recommend baking out the house as call where you [00:11:45] actually just get heat up the house.

Which is going to help these [00:11:50] VOCs dissipate faster. And then, uh, like you said, you know, carbon filtrations created [00:11:55] trapping VOCs into the carbon filters. So it's kind of that process of exchanging [00:12:00] the air, heating up the house and then carbon filtration. You know, the good news is over [00:12:05] time that these VOCs will lessen but unfortunately it could take years [00:12:10] for them to fully off gas.

So you have to keep that in mind. Do everything you can get a lot of air [00:12:15] exchange and certainly these tighter buildings are not helping, you know There's a a good [00:12:20] a good little tidbit that I found on the EPA's website in an [00:12:25] article for should I use bleach and the EPA says no because You [00:12:30] know the object shouldn't be to kill mold even dead mold may cause an allergic reaction [00:12:35] in some now You know, of course they use the word allergic instead of, you know, what, what they really [00:12:40] should say, but at least they kind of preface that with the, the, the objective should never [00:12:45] be to kill it because the truth is we don't, we don't really know what happens as you break down a [00:12:50] particle you know, into smaller fragments.

I think one thing we do know is when you kill something, like you kill a [00:12:55] weed in your backyard, what does it do? It shrivels up, it dies, but there's still evidence that there was [00:13:00] something there you know, and. You ever watch a CSI crime scene, right? Yeah, somebody gets [00:13:05] killed while they, there's still a body there, right?

There's still something always left behind. And when we're [00:13:10] talking about microorganisms, we don't really understand yet what these particles left [00:13:15] behind can really do to us. And if it's. part of the, the overall health problem that we're [00:13:20] experiencing, because obviously we have homes that have water damage and maybe it dries up, [00:13:25] maybe the problems resolved, maybe the mold dies off and breaks into smaller fragments.

We're still [00:13:30] seeing that affect people. So we just want to be cautious about that aspect.

[00:13:33] **Dave:** We do. And it [00:13:35] sounds like your, your mega point here is you really, if, if you've had mold [00:13:40] you really, really, really need to clean exceptionally well. Because it is like a [00:13:45] chemical, a chemical waste site and probably air filters as well to keep the dust down.

I [00:13:50] find dust in my air filters all the time. Like, I don't know what the heck it all comes from, but it's always [00:13:55] there. So I open up my air filter and God, look at that. So other than those two [00:14:00] things, you know, wet mopping and things like that, what else do you do for cleaning?

[00:14:04] **Michael:** Well, [00:14:05] let's, let me, let me kind of make a step by step process for you that I think will be very helpful.

You [00:14:10] know, your house is water damage. And you're going to open up. These wet walls, you're going to find living [00:14:15] organisms like mold and bacteria. You're going to remove those. That would be considered the traditional [00:14:20] remediation process. But then beyond that, what's not included in the traditional remediation [00:14:25] processes, all of the particles that have been created over the time, however long that mold or [00:14:30] bacteria has been there.

And so now you want to look at my HVAC system, [00:14:35] right? Cause that stuff is going to be drawn into your HVAC system. system. I hate to break it to you [00:14:40] guys, but the, those filters that you buy at Home Depot or Lowe's, they are not efficient enough [00:14:45] to remove something as small as mold or bacteria. And so all that stuff is getting in.

[00:14:49] **Dave:** Should I buy a different [00:14:50] kind of filter? Is there a special name to look for?

[00:14:52] **Michael:** Yeah. So the highest. Efficient [00:14:55] filter that you can get in today is Merv 16. Ones that you get at Home Depot are [00:15:00] probably Merv eight to, to Merv 12 or something to that effect. Merv 16 can remove as small [00:15:05] as seven nanometers in particle size.

So now we're getting into some viruses and things of that nature, which are. [00:15:10] Obviously much, much smaller than mold toxins, bacteria. [00:15:15] That's really what we want to start moving forward to now. They've put that technology more in [00:15:20] commercial buildings as of late, but there are residential products that you can get but [00:15:25] people don't know about them.

[00:15:26] **Dave:** That's a fantastic piece of advice. Get a Merv 16 filter. [00:15:30] This is something you can do for what, like a hundred bucks or something.

[00:15:33] **Michael:** I wish because [00:15:35] a MIRV16 filter has to be pretty thick. You know, they're, they're going to cost probably anywhere between, you [00:15:40] know, 1, 500 and 2, 500. Because Jesus Christ, seriously, 2, 500 for [00:15:45] a house?

Well, let me, let me break this down. It's not like a filter that you throw [00:15:50] away every month, right? This is something that gets installed into the return duct. The biggest [00:15:55] challenge that they had in engineering, something like Merv 16 is if you filter [00:16:00] out tiny particles and you have thicker filters to do that, you obviously have to [00:16:05] not be able to, you have to do that without restricting the airflow, you're going to freeze your coil and [00:16:10] have all these other HVAC problems.

So it's got different chambers that. That kind of the air [00:16:15] goes through that gets filtered as it goes. That's the only way to really make this [00:16:20] work. And it all also has to be electrically charged. So you're talking about like, it almost looks [00:16:25] like a, uh, 1996, you know, computer modem that slides into your return dock.[00:16:30]

And then as you. Change your filter, which by the way, you only change about every [00:16:35] year and a half to three years. Then you have that. It's, it's a big, you know, probably one [00:16:40] foot by three feet filter that you're kind of sliding in and out.

[00:16:43] **Dave:** I'm looking online. I'm seeing, [00:16:45] you know, Linux. Merv 16 replacement filter, 16 inch by 25 inch [00:16:50] by five inch for 142 bucks.

Is that not good enough?

[00:16:53] **Michael:** Well, that's the replacement filter, but you [00:16:55] need, you need first the starter kit that installs it into the unit to be able to soak it. [00:17:00] So it's a

[00:17:00] **Dave:** furnace upgrade, a one time furnace upgrade after that. Or a furnace intake [00:17:05] upgrade. After that, you, you end up with exactly filters.

[00:17:08] **Michael:** Yeah. And you know, [00:17:10] even if you get the top of the line needed at 2, 500 bucks a pop, right. Think about it from this [00:17:15] perspective, you're protecting something that's worth 15, 20 grand, you know, and once that gets [00:17:20] contaminated, you know, if you ever look at an evaporator coil, it's like a million pieces of metal welded together.

[00:17:25] Cleaning that thing is very difficult to do. And so protecting that to [00:17:30] have. You know, really optimal air quality is, is a sound investment.

[00:17:34] **Dave:** Now, a lot [00:17:35] of the upgrade collective, by the way, if you're listening, you can go to Dave Asprey. com and sign up to be a [00:17:40] live audience member. They're saying like, if you do Merv's 13 is better than it ruins [00:17:45] your AC.

It seems like there's a lot of pushback, even from people who aren't AC experts saying that this is [00:17:50] going to be really rough on your house. True.

[00:17:52] **Michael:** Yeah. It's a, so this particular [00:17:55] unit that I know of is a Merv 16 unit that has the pressure drop of a Merv. Eight. So for [00:18:00] those that are talking about Merv 13 filtration, yes.

Merv 13 is obviously more [00:18:05] restrictive than a Merv eight. Merv eight is, is the ideal restrictive airflow [00:18:10] in this sense. But now if you get a product that is engineered properly, you can have the [00:18:15] pressure drop of a Merv eight as I was talking about different chambers as the air passes through.

[00:18:19] **Dave:** [00:18:20] This is really useful.

So if you're remodeling and you have control of that, that does sound like a good [00:18:25] investment to make sure that you have that ability to really properly filter your air. Plus bonus [00:18:30] point, if there's a forest fires in your area, things like that, it's just, you're going to live longer.[00:18:35]

[00:18:40] HVAC kind of is necessary where I live in Texas because you need AC because it's really hot [00:18:45] here. But for a lot of people, like when I lived in the Pacific Northwest, [00:18:50] You just need baseboard heaters. It seems like those are actually a lot better from an environmental perspective. There's [00:18:55] no duct work.

There's no recirculation of air, a lot less dust. Uh, easy to

[00:18:59] **Michael:** [00:19:00] clean. Yeah. No. And they're cheap too. And they're cheap. Yeah. I mean, you [00:19:05] know, when, in terms of heat source, that's great. Obviously they don't really provide a C these [00:19:10] baseboard heat units. And so there's always, it's AC is the monster here [00:19:15] because.

Any evaporator coil, which basically provides us that AC it's, it's going to [00:19:20] condensate, you know, it's, it's designed to pull the moisture out of the air to cool it. You know, [00:19:25] there's any coil is going to push off probably like 45 to 55 degree [00:19:30] air. So you're going to have, you know, Condensation due to the temperature differentials of [00:19:35] the room that you're actually cooling or where that HVAC unit is located.

So, you know, [00:19:40] people don't realize that, you know, you, you always going to have this wet environment in your HVC [00:19:45] unit when you're using AC and that's true of. Even if you just have the, in the wall [00:19:50] units, right? So the biggest complicated part is the coil itself. And if you [00:19:55] don't filter the coil, the mold that's among us is going to get to it.

And it's going to start to [00:20:00] grow on it. Same, same thing with bacteria.

[00:20:02] **Dave:** Wow. So there's a lot to be done [00:20:05] around ACs. So if, if someone was listening to this going, Oh man, I do have some of these [00:20:10] health problems and I don't know what's going on it feels a little bit overwhelming. So you [00:20:15] can clean everything in your house or hire a cleaning service.

A new little tip there. [00:20:20] If you're hiring a cleaning service, tell them they can only use your chemicals and your tools. The [00:20:25] last thing you want is from some stacky botrous mold bomb house. They bring a mop from there into your house. [00:20:30] It's like swapping Q tips with someone. Just don't do that. But aside from having a cleaning service [00:20:35] come in and just only use your stuff, including rags and everything okay, what do you do [00:20:40] about your HVAC?

It kind of feels a bit overwhelming. If you don't have 2500 bucks to do, should you have it [00:20:45] cleaned?

[00:20:45] **Michael:** Well, you can have it cleaned. You know, and I, can be pretty [00:20:50] expensive to, you know, the typical going rate of a good company to come in and clean your systems about a [00:20:55] thousand bucks. You know, so when you look at it from that perspective, the 2, 500 doesn't seem so bad because [00:21:00] without it, you're definitely going to need to clean that thing at least once a year to really maintain and [00:21:05] prevent these, these small particles from forming living organisms around that coil.

But [00:21:10] You know, you obviously can, can, can do those two strategies, whatever makes more sense [00:21:15] for you. But if you can't get the MIRV 16, get the best one that you can afford. I mean, [00:21:20] basically how it works is the higher, the MIRV rating, the smaller, the particle it can [00:21:25] remove. And so you want to really think with that.

You know, some of your guys were saying that, you know, going [00:21:30] MIRV 13 or higher, you know, Could cause problems. The other thing to consider is two is where do you put [00:21:35] this filter, right? So you don't want to have a filter at the unit, a filter in the grills. [00:21:40] You know, at the returns, it's just too much filtration.

It's going to restrict too much airflow. You want to pick [00:21:45] and choose one and get the best filter you can either at the return grills or at the [00:21:50] actual unit itself. And cleanings, cleaning's huge. I mean, cleaning's a huge part of, [00:21:55] of maintaining air quality. As a matter of fact. If you want to know, you know, if your air [00:22:00] quality is good, stop testing your air, start testing your dust.

[00:22:03] **Dave:** Okay testing [00:22:05] dust. You have some sort of dust testing thing. Tell me about it. [00:22:10]

[00:22:10] **Michael:** Yeah, it's called the dust test, so very easy to remember. What it uses is uses MSQ [00:22:15] PCR technology, so DNA analysis. Yes, we're all having code flashbacks with the word [00:22:20] PCR here. So, with this technology, you're identifying and inspecting [00:22:25] speciating different species of mold, bacteria, you know, mycotoxins, different mycotoxins you can [00:22:30] have in your home.

And I think it's really important that we start looking at that [00:22:35] not because of the technology or anything else, but because of actually, it just makes more [00:22:40] sense when we test the air, we're only really capturing a within a small [00:22:45] proximity of where that actual pump is located and be, you know, dust is too [00:22:50] big to fit inside of this cassette.

So you're going to be missing all the mold that's there. It's settled in your dust. [00:22:55] You're not going to get an accurate read of what you're actually being exposed to. But since we [00:23:00] know that we breathe in our dust all the time, I'm literally seeing dust particles around me as this the, [00:23:05] as the light is right in front of my face here.

No, I, it's a problem. And [00:23:10] if we test our dust, we will more than likely find what we're being exposed to. And if [00:23:15] it's abnormal, then we will by doing air tests.

[00:23:18] **Dave:** Wow. Okay. [00:23:20] And I think there's a case for air tests. There's a case for a dust test. [00:23:25] And you said you developed it. I know that your, your book and all of your [00:23:30] stuff about what you do just for the resources for cleaning and all that is that the [00:23:35] michaelrobino.

com, do you have links to your dust testing there as well?

[00:23:38] **Michael:** Yeah. So you can go to the [00:23:40] dust test. com. Or you can go on the, uh, michaelrobino. com check that [00:23:45] out. You know, I didn't. I didn't develop the technology. It's existing technology that's been [00:23:50] around. But I did develop the ability to bring it to market for [00:23:55] consumers so they can do their own at home testing instead of, you know, cause most labs yeah, [00:24:00] they sell to professionals.

You need professionals to come in and do it. And it's just too costly for [00:24:05] folks, you know, trying to get more Direct to consumers so that people can buy the test, do it [00:24:10] themselves, get the data they need. And we partnered with EMSL, the largest lab largest [00:24:15] environmental lab in the U S to do it.

[00:24:17] **Dave:** Got it.

It's it, it's kind of funny [00:24:20] for a long time. If you wanted to do a lab test to find out what's going on in your body, you had [00:24:25] to go into a doctor's office and pay for a visit. Even though you didn't really want to be like, I just wanted my [00:24:30] vitamin D levels. Thank you very much. But no, no, I have to decide whether I'm going to allow you to have your vitamin [00:24:35] D levels.

And it's like, stop it. And I think there was some of that going on with [00:24:40] the home environmental lab testing. I believe that you have a fundamental right to use [00:24:45] any technology you want to know anything that we can discover about your environment [00:24:50] or about your home. And anyone who tries to get in your way of doing that, they are not your friend.[00:24:55]

Like they have an economic interest in making you do more work than [00:25:00] you want to do. And I'm lazy. And I embrace my strategic laziness. By the way, guys, my [00:25:05] new book, it's going to tell you why you're lazy too and why that's a good thing for motivating yourself to do things [00:25:10] better. But nonetheless, just no.

So thank you for making it. So bye. [00:25:15] I can buy what formerly I had to spend a lot of money to have someone come out and swap some dust that I [00:25:20] could swap myself. I think that's really cool.

[00:25:22] **Michael:** Well, that's it. I mean, we need information. We need to be empowered to [00:25:25] make decisions and make the right decisions.

And it should be based on data. Yeah, it shouldn't just be [00:25:30] some guy coming into your home and saying your home looks fine or, you know, Oh, this is a problem. Let's rip [00:25:35] all the walls down. I mean, you should know the information that can tell [00:25:40] you what's the best course of action to make my environment better.

Safe and healthy for myself [00:25:45] and my family. And so, you know, I think creating products that put that information into people's [00:25:50] hands is, is, is a vital thing to do.

[00:25:53] **Dave:** My biggest takeaway here is to [00:25:55] upgrade the filters on my furnace and to double [00:26:00] down on dusting and cleaning and like HEPA vacuuming book spines and all that.

And [00:26:05] just to keep the dust down, no matter what it takes and tons of tips and tricks in here. Thank [00:26:10] you so much.

[00:26:10] **Music:** Do

[00:26:14] **Ryan:** you worry about [00:26:15] CO2 levels in your houses? You know, that's a really good point you bring up. And I want to make it clear that a [00:26:20] green building does not equal a healthy building. I wish it did.

That would [00:26:25] be great. But unfortunately, we can't have both of those things at the same time. Because it does take [00:26:30] extra energy from some of these systems. You know, back in the eighties, nineties, they made [00:26:35] a lot of these homes, super airtight in an efficiency goal to try to lower carbon [00:26:40] reduction. But the problem with that is when we made these airtight homes is we forgot to let them breathe [00:26:45] now in a commercial building, it's required to have so much CFM per hour of air [00:26:50] exchange, but in a residential home.

That's not required by code. And so unless you [00:26:55] specifically ask for that or install an energy recovery ventilator, a heat recovery, ventilator, fresh [00:27:00] air system, your home is not breathing. And that's where we start to see a lot of these problems. Cause when we have [00:27:05] a mold problem now it's amplified because we're not getting fresh air in to flush that out.

Also, the [00:27:10] CO2 levels are going up. Any of the VOCs or the chemicals that are off gas, and they're starting to now [00:27:15] build up in the home. And so to ventilate the home, to bring fresh air, and now we have to either [00:27:20] heat it or cool it, and that does increase energy costs.

[00:27:22] **Dave:** It's a tough call. So if you seal the [00:27:25] house, then you're going to get a terrarium where mold grows, but you'll spend less on heating and [00:27:30] cooling, or you move air from the [00:27:35] outside in, you filter it carefully and you recirculate some of the air through a HEPA air [00:27:40] filter.

But to do that. It takes more electricity and it costs more to build the [00:27:45] building. Does this mean that people should move into big residential apartment buildings because there [00:27:50] are codes that require that?

[00:27:51] **Ryan:** You know, I think what it comes down to instead of building a huge [00:27:55] 6, square foot home, maybe we just downsize just a little bit and we focus more on the [00:28:00] health so that it evens out in the long run.

Because I've ultimately, like you said, it is more important that we are [00:28:05] healthy and that our brains are thinking properly, especially these days, it is so important that [00:28:10] all of us are top notch on our game with our thinking. And if we're not living in a healthy [00:28:15] building, that's not going to happen. So to me, that's probably the most important thing that we can focus on.[00:28:20]

[00:28:20] **Dave:** Okay, so I agree with you. It's better to have a smaller place with high [00:28:25] quality air. And low volatility outgassing [00:28:30] furnishings. So I focus on quality over [00:28:35] quantity for living space. And if you're lucky, you can get some of both. But [00:28:40] truthfully, I would rather have a thousand square foot home. That was clean [00:28:45] than a 4, 000 square foot house where we had to cut corners and paint it with [00:28:50] things that make you just tax your system all the time with some mold in the ceiling and [00:28:55] all of that.

So it is very important that you're comfortable in your home, [00:29:00] but maybe it's not a size issue. What what besides mold are the top [00:29:05] five pollutants indoors for people today?

[00:29:09] **Ryan:** So [00:29:10] yeah, mold, I would say is number one. I would say is EMF exposure. We have so [00:29:15] much technology around us, the wifi, the Bluetooth, the computers, the laptops, the cell phones, [00:29:20] and now 5g outside.

But our technology is going through the [00:29:25] roof and a lot of it now is wireless. So that exposure, I would say would be the second leading [00:29:30] cause of the illness and stressors on the body. Then after that, I would say would be the [00:29:35] chemicals that we're bringing into our house, the personal care products, the cleaning products, um, if you're still [00:29:40] using the fragrances, the plug ins, that's not a good idea.

What you're building your home with, the off [00:29:45] gassing, the formaldehydes. Those are probably third in line. Then I would say [00:29:50] probably a water quality. There's not very much water in the United States that you can drink [00:29:55] out of the tap safely, or at least that I would drink for doing thousands of tests [00:30:00] highly recommend filtering your water.

And that also goes to what you're bathing and showering in. Cause you can [00:30:05] absorb just as much that way as you can drink. And so those, and then I would say [00:30:10] air quality, just in general, focus on the particulates, the things that we're breathing in. [00:30:15] Smoke season, you know, East Coast got hit pretty hard this year with the fires, which they normally [00:30:20] don't.

West coast usually gets it. We've actually been pretty lucky out here this year. Those are probably [00:30:25] the, the five main things that we, we've focused on that we see in the environment affecting [00:30:30] us.

[00:30:30] **Dave:** All right. So I'm surprised. EMFs are the second [00:30:35] thing after mold. So you look for a mold, then you look for EMFs, [00:30:40] and then you look at general things like water quality and air quality and chemicals.[00:30:45]

So how do you know if you have mold in your

[00:30:46] **Ryan:** home? So mold needs water to grow. So if you've ever had [00:30:50] any water damage, any water leaks, any flooding. If you got a five year old that [00:30:55] loves to play in the bathtub and turn it into a swimming pool every night. This is the kind of things that we look [00:31:00] for. Also looking for bubbling in the walls expanding, just things that don't look [00:31:05] right.

Looking underneath your, your sinks. A big trick I like to do is go into the toilet and [00:31:10] lift, lift up the toilet tank and you can see if there's any kind of mold growing in there. That's usually an indication [00:31:15] that you have mold spores in your air. It's like a perfect petri dish in your house. Also, [00:31:20] If you're going into your house and you don't feel very good and then you go on vacation or you go hiking or you're, [00:31:25] you go out to the beach and you feel great and then you go back to your home and you feel horrible, that's a [00:31:30] really big red flag that you got something going on.

I wish I

[00:31:33] **Dave:** could hear you say that twice [00:31:35] because so many people say, Oh, I'm not stressed. I'm on vacation. It's like, no, [00:31:40] you're in a different environment and your environment is making you weak, but you don't know. You haven't learned to [00:31:45] recognize the pattern yet. When people have mold, it increases [00:31:50] their sensitivity to EMFs.

It increases their [00:31:55] sensitivity to formaldehyde, to all the other [00:32:00] fragrances. It can actually cause MCS, which is when you're sensitive to [00:32:05] chemicals. I've had that since I was a teenager because I grew up in a basement with toxic mold. And I would just [00:32:10] hold my breath walking down the, uh, Like the fabric softener aisle at the grocery store because I would [00:32:15] just get dizzy and it would smell really bad.

I saw an interesting statistic, [00:32:20] 75 percent of homes in the US use air fresheners. [00:32:25] These are endocrine disrupting chemicals that mess with your estrogen, your testosterone, [00:32:30] with your brain, with your children's development, because it smells pretty. Because [00:32:35] someone convinced you that your house shouldn't smell like a house.

Or even worse, you're using it to [00:32:40] cover up the musty smell, which is caused by toxic mold. So one of the things you could do [00:32:45] right now as you're listening to this show is you could go into your car, you take those dumb little pine [00:32:50] tree things, throw them away and never buy another one. And then go to every room in your house that has an air [00:32:55] freshener and throw it away.

And if you were to do that, you say, but I [00:33:00] might smell something. Yes. That would be your house. If it smells bad, you should clean it or get an air freshener or sorry, [00:33:05] get an air filter. Okay. Or maybe you could get some essential [00:33:10] oils and a diffuser if you want to do that. This is how healthy homes are made, but [00:33:15] if you're doing that right now, the effects on your IQ, on your hormones, they're [00:33:20] meaningful and there's no regulation of the stuff that's in those.

[00:33:23] **Ryan:** Yeah, there's a point I want to make [00:33:25] if it's one takeaway from this is that clean does not have a smell. If you go into [00:33:30] a house and it smells, it's usually because of a biological, a chemical, or some [00:33:35] sort of particulate. If you smell something, we need to address it. Like you mentioned, a lot of times [00:33:40] we'll have a biological smell, maybe it's pet urine, maybe it's a little mold.

And then we [00:33:45] want to go and cover that up with an air filter, which now is a chemical. And now, so now we're adding a third air freshener [00:33:50] and air filter, we'll get it out of the air and air freshener. We'll mask it. I use them backwards. Yeah, [00:33:55] the air. Yep. So, you know, the glade plugins and stuff, the chemical stuff, that's what we're talking [00:34:00] or candles, you know?

And so. We try to strive for no smell and neutral smell into a house [00:34:05] so that when we walk into a home, when we're done with it, it should not have a smell.

[00:34:09] **Dave:** I totally [00:34:10] agree. You might get a cooking smell for a brief period of time and you don't have to hide that. [00:34:15] With a fake chemical smell, cooking smells dissipate [00:34:20] and they are air pollution when you think about it.[00:34:25]

So what I like to do, especially when I'm cooking is I turn up the air filters that I [00:34:30] have and I turn on the vent hood so that that way I can get as much of [00:34:35] that out because you know, Cooking fumes are the number two source of indoor air pollution [00:34:40] after smoking, if you still smoke in your home. I noticed that I had [00:34:45] a problem with that in my home in Canada, where we actually upgraded [00:34:50] the hood on our stove so that it had an outdoor vent instead of recirculating the [00:34:55] air.

Because every time I would cook, my air filters wouldn't suddenly [00:35:00] recognize that the indoor air quality went from blue all the way to red, and then they would turn on [00:35:05] full volume. Like, wait, my whole family is breathing this every time I cook something on the stove. That's not [00:35:10] cool. Yep. Correct. And that's, you know, a point source in the house that we have pollution.

[00:35:14] **Ryan:** That's what the [00:35:15] vents are made for. You know, in the laundry room and the bathrooms and kitchen, we typically have these [00:35:20] exhaust fans. And so. These are sources of pollution in our house that we want to exhaust. So if you're cooking, and [00:35:25] especially if you're using gas, you need to be using that vent all the time.

And so that's [00:35:30] one way we're going to exhaust it out. Now, the other thing you mentioned with air purification units, [00:35:35] either a standalone unit. Or a built in HVAC system [00:35:40] where we're pulling the particles out of the air. So we've got that. And then we got bringing the fresh air [00:35:45] in, exhausting the stale air.

And those are really the two ways we hit air quality.

[00:35:49] **Dave:** Very [00:35:50] good advice on, on what to do there. I haven't solved the cooking thing. I still notice [00:35:55] that the air quality goes down when I cook indoors. But I want to ask you this. How [00:36:00] important is the gas stove versus electrical?

[00:36:03] **Ryan:** With the electric [00:36:05] range, you're going to have an EMF field from it.

You're going to have a magnetic field. So if you're standing next to it, you're going to [00:36:10] be exposed to this magnetic field. Now I prefer gas, but I also very strict [00:36:15] about making sure that I'm ventilating properly. I have a pretty strong fan. I crack the door a little [00:36:20] bit in the kitchen to make sure we have good positive airflow going through the house.

Then I also have air [00:36:25] filters one in every room just to kind of as a backup. Cause, but yeah, every time, you know, we cook [00:36:30] inside, we're cooking fish or something, it's, they're going to kick on for a little bit. You're going to filter that out. [00:36:35] Super critical with gas, make sure exhausted out. Otherwise I don't really feel like it's [00:36:40] too big of a problem, but just make sure you're managing that.

[00:36:42] **Dave:** Okay, if you had a choice to improve [00:36:45] the quality of human lives and you could ban either gas stoves or [00:36:50] politicians Which one would you ban? That's a tough one

[00:36:53] **Ryan:** no politicians [00:36:55] for sure

[00:36:58] **Dave:** All right, maybe [00:37:00] those decisions are not our government's decision to make for us I'm just like lighting [00:37:05] is also our decision.

No one else's. As we're recording this, this is the [00:37:10] first month that the U S government has outlawed the only type of light bulbs that are [00:37:15] good for you, which was incandescent and halogen. So now you can only buy the ones that [00:37:20] create lots of EMFs and lots of visual stress and that dysregulated [00:37:25] our bodies, which are led light bulbs.

[00:37:27] **Ryan:** Yeah, so if you were to say, what's the [00:37:30] sixth thing that affects us, I would say lighting. Lighting is huge. It's what you talk about with circadian [00:37:35] rhythm and red light. You've been talking about that for years. So that's super critical in the home to make sure [00:37:40] we have our lighting dialed in, but not just the color spectrum, but the flicker rate, which is where we get into with the [00:37:45] LEDs.

They have a flicker rate and that's what makes them efficient. They're on for a period of time, then they're off and [00:37:50] on. This has happened so fast that to us, it kind of perceives like it's natural light, like the [00:37:55] sun. yeah. Yeah. But if you measure it, and then the brain knows that it's actually a flicker, right?

And that [00:38:00] actually affects quite a lot of people. I've had a lot of people tell me, I'll go into their home, and they say, Well, I don't really [00:38:05] like having the lights on. I don't feel that great with the lights on. I say, What about when you go outside? Does the sunlight bother you? [00:38:10] Well, no, the sunlight doesn't bother me.

That's fine. Hey, well, it's not the light that's bothering you. It's that [00:38:15] flicker rate and the too much blue light in it. That's, that's the problem.[00:38:20]

[00:38:23] **Dave:** I'm a little torn [00:38:25] because you mentioned earlier candles and air pollution, and I would rather have [00:38:30] candlelight than led light in the, because led light is so disruptive. I can see [00:38:35] the flicker. A lot of people can't see it. I have a very fast brain [00:38:40] and. it's just not good for you. And I know what it does to my sleep.

Why are [00:38:45] candles bad?

[00:38:46] **Ryan:** It's not necessarily the candle or the flame. It's what they're making the [00:38:50] candles out of. So if we're using petroleum based candles and then they're adding [00:38:55] fragrances into it. Now we're releasing those particles into the air and we're breathing it in. If you were using natural [00:39:00] beeswax with essential oil, that's not a problem.

It's it's what's in the candles that they're, that you're [00:39:05] breathing in. That's the problem.

[00:39:06] **Dave:** Right? So they're putting the same stuff that's [00:39:10] in glade air freshener into a petroleum or a soy based [00:39:15] candle. And then it makes little basically exhaust into the [00:39:20] air a pure beeswax candle also creates air pollution.

It's just less harmful [00:39:25] air pollution. And I would rather do that than bad lighting. It [00:39:30] seems like you can get wax based led candles that are dim enough [00:39:35] that they don't create too much of a problem. I actually have those all over my house because it's easy and low [00:39:40] cost. And. It's a lot gentler light than having these direct overhead [00:39:45] LEDs, now that I can't just have a normal light bulb.

Okay, so light pollution's a part of [00:39:50] it. Your company, Test My Home, is an interesting interesting [00:39:55] company. It seems like we're going to need a lot more of this over time because our [00:40:00] government has completely given up on any kind of standards that are [00:40:05] around human health. It's more like which industry profits most by them forcing you to make your house the way [00:40:10] you don't want it to be.

Let's talk about some of the other stuff that's going on in, in your [00:40:15] home. So mold, yes, we've talked about that and I've done several [00:40:20] episodes about it. Homebiotic is one of my companies that makes a [00:40:25] probiotic spray that you put in your house. And it's something that I feel like, like there's a [00:40:30] good body of knowledge on it and it's getting stronger and stronger.

And I'll just say to sum that up for [00:40:35] people. If you smell musty stuff, you probably have a mold [00:40:40] problem if you don't smell musty stuff, but you don't feel good and you don't have [00:40:45] another excuse, look for mold. You can hire you can hire Ryan or one of his guys to come out [00:40:50] and take a look if you're in one of the five locations and it's testmyhome.

com, right? [00:40:55] Right. Yep. Okay, cool. One of the things that drives it though, is [00:41:00] humidity. What is the right range of humidity to have inside your home?

[00:41:04] **Ryan:** Ideal [00:41:05] for the human is 45 percent humidity, anything over 60 [00:41:10] percent and we start getting cold surfaces, we can have condensation and really anything over 80, then you're [00:41:15] really in the more of a danger zone where we're going to have spontaneous mold growth.

[00:41:18] **Dave:** I was in Cart [00:41:20] where was I? Yeah, I was in Cartagena, Colombia [00:41:25] recently at a hotel, actually at a couple of hotels. The outside humidity was [00:41:30] 99%. It was crazy. And of course, the AC is on running full blast in the hotels because it's [00:41:35] really hot. And if you open the door to your hotel room to the outside, it's really hot.[00:41:40]

Within one minute, the floor would have standing water [00:41:45] from condensation, that hot, wet, dense air hitting cold floor. [00:41:50] And to the point there were cold, you know, there were signs everywhere saying, watch out, you could fall down. [00:41:55] But everywhere, everywhere smelled like mold. I was in the sofa tell, which [00:42:00] is a nice hotel.

The bedsheets smelled like molds because you can't seem to get [00:42:05] away from it. What do people who live in really human environments. How are they ever [00:42:10] going to have a place where there isn't mold indoors if they have air conditioning?

[00:42:13] **Ryan:** They have to build their homes [00:42:15] accordingly. And I don't know, down there, but I know in Mexico, we have a lot of concrete.

You don't [00:42:20] see drywall down there, especially along the coast. It's a lot of, you don't see carpet as well. It's [00:42:25] cement floors, it's cement walls, it's brick. It's material that is not conducive to mold growth, [00:42:30] but they also keep it really clean, too. And that's another thing, is you gotta take the food source away.

So, [00:42:35] mold needs water, it needs a food source, which can be an organic material, and then, it [00:42:40] needs a mold spore. So, mold spores are gonna be in the environment everywhere, we can't really control that. Moisture we [00:42:45] can control to a certain extent, except for the situation you're talking about. So, then the third thing is, let's take away their [00:42:50] food source.

So, we can take one of those Legs out of the three legged stool. We're not going to have a [00:42:55] problem. So that's typically how we address it in humid climates.

[00:42:58] **Dave:** I've seen [00:43:00] locations where the air conditioner, because it creates moisture, they actually put the [00:43:05] moisture to evaporate inside the home. I was just going to create [00:43:10] mold, right?

So a good air conditioner is going to channel the moisture into a drainage system that goes [00:43:15] outside the house, right? That's really important. What about carbon monoxide?

[00:43:19] **Ryan:** Yeah, so [00:43:20] that's a silent killer. That's a dangerous one. You hear these tragic stories or families fall asleep and they never [00:43:25] wake up and we don't want that to happen to anybody.

And that comes from burning fossil fuels. So our [00:43:30] cars put off carbon monoxide, your water heater can potentially put off carbon monoxide. Now they [00:43:35] should have ventilation systems that pull that out to the outside, but sometimes those fail. Sometimes [00:43:40] those get plugged up. I was actually staying in Airbnb once when I went in and it just didn't smell right.

And I'm [00:43:45] doing some investigation. It was a basement level of a house. That in the mechanical room they [00:43:50] had the fresh air return that came in to supply air to vent the heater to go [00:43:55] out Well, they had stuffed a pillow in it. And so I called the guy up. I said what's going [00:44:00] on? Why is there? Oh, well that blows cold air in in the winter time.

So we plug that up. So, you know [00:44:05] save some energy Well, I said that's your fresh air intake system, which provides Ventilation [00:44:10] or your water heater. That's super critical to have that. And, you know, taught him a little [00:44:15] lesson about that. But it's really important that, we check these systems and check the ventilation [00:44:20] on them and make sure that they're out ventilating properly.

And there's carbon monoxide meters that you can [00:44:25] buy. That I would recommend put next to any gas appliance that you have in your house. Because heaven forbid [00:44:30] anything horrible happen

[00:44:31] **Dave:** like that to you. So, that's a good thing. Especially in your bedrooms. [00:44:35] Yep. And I've known a large number of people who've been poisoned by toxic mold in their [00:44:40] homes.

But I have a few other friends who were poisoned by carbon monoxide. Where [00:44:45] chronic exposure over long periods of time, not enough to kill you outright, but enough to just weaken [00:44:50] you. It can create long term effects and it's hard to heal from. So, this is a 50 [00:44:55] problem. You get a carbon monoxide detector, you have it running in the house, a lot of modern [00:45:00] smoke detectors do that as well, then you know, and I want to

[00:45:03] **Ryan:** point something out with that [00:45:05] because we'll measure down to about 400 parts per million, so they're set to [00:45:10] save your life, but they're not the the long term chronic illness that you're talking about.

Really? We [00:45:15] want exposure levels less than one parts per million. So if we have a small leak, [00:45:20] Where maybe it's up to a hundred parts per million. It's enough that over time, chronically, you're feeling [00:45:25] fatigued and brain fog and just wore down. And I've seen situations like this where we've gone to a new home [00:45:30] and we test, we have sensitive meters and find we have a small leak, not high enough to set off [00:45:35] the meters.

Because they set those meter levels pretty high. So that [00:45:40] every, everybody doesn't call the fire department when they go off Thanksgiving [00:45:45] dinner, you know, it's really meant to save your life. So I would recommend in addition to having [00:45:50] the meters or the, the monitors, which will save your life, but also you can go on Amazon and [00:45:55] buy the actual carbon monoxide meter that will go a lot lower and just do regular checks [00:46:00] just to make sure you don't have those low levels.

They're giving you that chronic exposure. How much does that [00:46:05] cost for one of those meters? You can get a good one online for 50 bucks. Okay, [00:46:10] so not terribly

[00:46:10] **Dave:** expensive. No, not at all. If you're a parent, this is probably even more [00:46:15] important, just to make sure that the space for your kids is safe. Especially if you're just not [00:46:20] feeling right.

Okay, what could it be? Look at molds. Look at carbon monoxide. Those are those things that are [00:46:25] hard to spot. What do you do about VOCs in your environment where you can't, you know, [00:46:30] rip out all your carpets and change your walls?

[00:46:32] **Ryan:** the biggest thing I recommend in that situation [00:46:35] is getting fresh air in the home.

It kind of comes back to what we were talking about. These homes are airtight, they're not breathing. [00:46:40] Crack a couple windows. If you don't have a fresh air ventilation system, then I would say every morning [00:46:45] for 15 minutes, go around and open up all the windows, flush all that out, start with brand new fresh air.[00:46:50]

And then in the evening, do the same thing. Now, the only caveat to that is if it's [00:46:55] a high pollution day, if you're in the inner city, or if it's a fire day and the smoke is pretty [00:47:00] bad those days, we want to keep things closed up, but in general, we [00:47:05] want to get fresh air into the home. Now, also the humidity can be a factor too.

If it's a really humid day [00:47:10] outside and make sure you have some way to control that humidity, if you're going to let all that humidity into the house. [00:47:15] It's not always a cut and dry answer, but generally installing an [00:47:20] ERV system that's going to pull in the fresh air that's going to pull out the [00:47:25] humidity it's going to bring, but you know, if you're renting, then it's kind of hard.

So, you know, those are some of the [00:47:30] things we can do fresh air.

[00:47:31] **Dave:** Okay. Fresh air matters so much. The other thing that [00:47:35] I like to do that has been a practice of mine for years. [00:47:40] If you get something that smells like plastic, those are [00:47:45] VOCs it smells like paint could possibly be formaldehyde, which we're going to talk [00:47:50] about in a minute.

But what I'll do is I'll take them and I'll put them in the sun [00:47:55] for a day or two and you heat them up and if it's winter then you [00:48:00] put them in a closed room with a strong heat source and a cracked [00:48:05] window. So what you're doing there is you're baking it out because they're volatile, which means they [00:48:10] respond to heat.

So you can take a pretty stinky foam thing, you leave it outside in the sun for three [00:48:15] days. It's not going to smell very much because you're baking out most of it. And. [00:48:20] Sun can't damage some things, but that seems to work well, even with cars, that new car [00:48:25] smell. I do the same thing. I put it in the sun, leave the car running [00:48:30] all day with the heater on full blast and the window cratches a little bit.

So the inside of the car is [00:48:35] just uncomfortable. You would not want to be in there. But what you're doing is you're creating circulation and [00:48:40] heat to just get that new car smell out so it doesn't give you a headache every time you drive. [00:48:45] Anything else that works for absorbing VOCs?

[00:48:48] **Ryan:** you can use carbon air [00:48:50] filtration that also works.

So air filters, air purification systems that have carbon in it. They need to [00:48:55] have the activated carbon. And a good amount. Some of these filters just have a little layer over the top. [00:49:00] And when the carbon has absorbed to its max, like a sponge, it's not going to absorb anymore. So you [00:49:05] need a pretty good carbon air filtration system.

So that the bakeout process, [00:49:10] ventilation, and the air purification, those are really the three main ways to handle it. But [00:49:15] my favorite way is to not bring it in the home in the first place or build a home [00:49:20] if you can from scratch that doesn't have the VOCs or buy a home that's a couple years old that's already [00:49:25] off gas.

And if we don't have the source in the first place, then it's a lot easier to deal with.

[00:49:29] **Dave:** [00:49:30] So interesting. I grew up in New Mexico. In fact, my grandparents were at [00:49:35] Los Alamos national labs. So, which is like where they invented radiation as well [00:49:40] as a lot of nuclear power that. That actually is a very clean source of [00:49:45] power the modern ones, which most, most of the time they're harder to build because of regulations.

[00:49:50] But if you really want lots of cheap power with fully encapsulated pollution [00:49:55] compared to coal or even solar, there are advantages. [00:50:00] So, but setting off bombs, we've set off about a thousand bombs on the surface of the planet, [00:50:05] and it's so weird how the mindset from the forties and fifties was [00:50:10] basically, you know, Oh yeah, let's set off a bomb in the middle of the ocean, an atomic [00:50:15] bomb, what could go wrong?

I don't know. There's a lot of animals throughout the ocean that are going to get a shock [00:50:20] wave and you're going to kill them all. But it was almost like. Complete lack of understanding [00:50:25] that we're part of the system. So it would have been better if we didn't have all [00:50:30] the bombs tested that we have had done.

Since that radiation is left [00:50:35] over, is there anything we can do to make sure that we don't have it in our homes?

[00:50:38] **Ryan:** You know, and that brings up a [00:50:40] good point I want to talk about is cleanliness of the home is super important that will [00:50:45] negate a lot of these issues. De dusting your home, regular cleaning, at least wiping [00:50:50] down the surfaces weekly, including floors, countertops, because a lot of the stuff is going to build up [00:50:55] in the dust.

These particles are going to end up in the dust. And when we measure dust in homes, it's [00:51:00] typically made up of dead skin cells, insect parts, insect feces mold, [00:51:05] mold particles, bacteria, pesticides herbicides, and of [00:51:10] course, it could have dust in it from fallout or other chemicals from the outside that's getting in as well.[00:51:15]

Doing a really thorough cleaning of the house is probably one of the biggest [00:51:20] biohacks you can do. Keep a clean home. That, I mean, I can't say enough about that.

[00:51:24] **Dave:** Got it. [00:51:25] So it comes down to the annoying stuff, cleaning your home.

[00:51:28] **Music:** Yeah. [00:51:30]

[00:51:31] **Dave:** What is the ideal

[00:51:32] **Ryan:** cleaning frequency? I would say at least [00:51:35] weekly going through.

I'm a little bit more of a clean freak just because of all the testing and [00:51:40] the nasty stuff that I see and I know what's in the air and in the dust, so I'm pretty clean. You saw [00:51:45] I got air filters in every room and we clean, we have a cleaning crew that comes in once a week and [00:51:50] they wiped out every surface.

So I think that's, I don't think you need to do much more than that, but at least a [00:51:55] good weekly wipe down.

[00:51:56] **Dave:** Yeah, it's a pain in the ass to do, but it's worth [00:52:00] it. I have an air filter in every room and you can see how much dust those things pick up. You look [00:52:05] in the filter, you're like, my God, that would have been on a surface or I would have been breathing it.

[00:52:10] And. Anything new, like new clothes or new sheets or towels, whatever, anything [00:52:15] I buy new, new things gets washed before I do it. There's proper [00:52:20] ventilation for the for the dryer because dryer exhaust puts a lot of small particulate plastic into the [00:52:25] air. It's a big deal. Talk to me about noise pollution and why you include

[00:52:29] **Ryan:** that [00:52:30] in what you test.

So this is actually one of my favorite topics. People don't think about [00:52:35] noise as a stressor, as a pollution, but it absolutely is. Think about a dog barking at four in the [00:52:40] morning or someone else's baby crying. Or think about your least favorite type of music [00:52:45] playing at the park when you're trying to enjoy yourself.

These are causing stressors on the body. And so we have [00:52:50] subharmonic frequencies that we can't hear that can affect our body. We can have, you know, for example, let's [00:52:55] say the refrigerator motor, every time it kicks on, it makes this whining sound or the HVAC system has a [00:53:00] leak and it has a high pitch frequency that goes on.

Long term, day in and day out, these things can [00:53:05] truly affect the body and provide stress on the body. Now, the flip side of that, think about your [00:53:10] favorite song. I have a couple favorite songs that I love to listen to that just put me in [00:53:15] the right mood every single time. And so, music and [00:53:20] auditory responses to the body, definitely very powerful.

There's a, [00:53:25] I just started doing this, uh, It's called new calm, I think, but you, you put it on and it's, it's, you know, [00:53:30] help soothe the body. But there's a lot of things like that meditation and it's all [00:53:35] stimulated with the sound. So I think we, like you said, we underestimate the sound a lot.[00:53:40]

[00:53:41] **Dave:** Talk to me about all this stuff you're tracking. So eight sleep, you guys make a [00:53:45] mattress. You make a sleep pad that has some cooling tech, but you've got [00:53:50] quite a bit of sensors in there. So walk listeners through the kind of data you're looking [00:53:55] at that you're feeding into the AI model so we can learn how to sleep better from robots.

[00:53:59] **Matteo:** [00:54:00] So our hero product is really the cover right now. That is the largest part of our [00:54:05] sales. And so it's a cover that you can install onto any mattress. And it does [00:54:10] two things, on one side it will change the temperature of each side of the bed based on your [00:54:15] biometrics and you will get better sleep and I can show more data.

And the other thing is tracking [00:54:20] everything about your biometrics. So let's start with the tracking. So we [00:54:25] reached 99 percent accuracy at tracking your heart rate and your [00:54:30] HRV compared to a medical grade ECG. If you think of that for a [00:54:35] second, 99 percent accuracy. Without wearing anything, you just go to bed as you did [00:54:40] for the rest of your life.

And this device has that level of accuracy. It's pretty insane. [00:54:45] How's, how are you doing that? Is that just microphones embedded in the cover? What is it? [00:54:50] No, it's the, the, the, the technicality, the technology is [00:54:55] ballistocardiography. So you're substantially sleeping on a stethoscope that you don't [00:55:00] feel, right?

It's a microfilm as a sensor, and it's picking up [00:55:05] vibrations. And so, it's really like when the doctor puts a stethoscope on the back, on your [00:55:10] back, and can pick and detect everything about your heart rate and your respiration. [00:55:15] We do the same, but with AI machine learning, and then we, we stream the [00:55:20] data to the cloud, where our algos are able to identify [00:55:25] heart rate, respiration, and sleep stages.

[00:55:27] **Dave:** So, your mattress cover, the Eight [00:55:30] Sleep I guess, it's hard to call it a device, but it's the, the pad. If I tap my finger on [00:55:35] it, you would know, like on a touchscreen that that's where I was touching. [00:55:40] Yeah.

[00:55:40] **Matteo:** If you just hit the floor, we could see the vibration from the floor. [00:55:45] It gives you a sense of how sensible

[00:55:47] **Dave:** it's like an earthquake detector on your mattress.[00:55:50]

Excellent. But the idea here is that you know, you can detect the smallest of movements. [00:55:55] And as a former entrepreneur in the wearable space, just [00:56:00] getting heart rate from the wrist, the way your Apple watch does today, that was really hard a while ago because of all [00:56:05] these artifacts, but we didn't have machine learning algorithms.

We had to kind of make them up ourselves. [00:56:10] And what you're doing is you're taking, what would be a big jumble of data, you know, [00:56:15] covers moving and you know, who knows what other like sounds from the city, even you're going to [00:56:20] be picking up. Right. And your AI model filters that out. And then it's able [00:56:25] to get 99 percent accurate as a wearable.

You said [00:56:30] ECG, not EKG though, right?

[00:56:32] **Matteo:** No, both, even EKG. So [00:56:35] comparable compared to an EKG, we are 99 percent as accurate as the [00:56:40] EKG. So you can refer to RIVIAs and things like that? If we forget the [00:56:45] legalese, right, we cannot tell you you have RIVIA, we are not FDA approved, so we are [00:56:50] not a medical device. But if you ask me what we can see in the back end, we, we can see [00:56:55] cardiovascular diseases and you wear nothing and we have a hundred percent [00:57:00] retention, right?

Once you install this product, you keep using it. It's not like a wearable that you need to charge it. [00:57:05] It's always there. So maybe you don't have a cardiovascular disease today, but you might have it in two [00:57:10] years. And if we do our job, well, we can help you [00:57:15] because of low, what we cannot do is for now, we cannot [00:57:20] diagnose any medical condition

[00:57:22] **Dave:** right now.

Can you tell me to call my doctor and [00:57:25] look, or say you have signs maybe of this? So like, so we can show

[00:57:28] **Matteo:** you a graph, [00:57:30] right? That is what we can do. And you start seeing there is something wrong, [00:57:35] right? Which is almost becoming even a moral problem at a certain point because [00:57:40] our. Now machine learning will know that you might have a certain medical [00:57:45] condition, but we are not an FDA approved device yet.

And so we cannot tell [00:57:50] you. And another thing that will be interesting for you is this for [00:57:55] cardiovascular problems, right? Then we are reaching 99 percent accuracy of [00:58:00] respiration. Which means we will be able to detect snoring and sleep apnea as well. [00:58:05] We already see it in the back end and same legal issues, so it's just a matter of [00:58:10] getting the approval.

[00:58:11] **Dave:** Snoring, fortunately, isn't a medical condition. You can report on snoring. [00:58:15] Exactly. What if we said we have sleep apnea and you just gave it a new name that wasn't a medical condition and [00:58:20] just, like, let's do that. You don't have cardiovascular disease. You have arty o [00:58:25] vascular disease. It's a new thing we made up.

I'm telling you, it's legally okay. Okay. [00:58:30] It's more than a line, let's say. This is [00:58:35] why I'm not an attorney, okay? That's all I can say. I'm so intrigued just [00:58:40] at the size of the data. My prediction is that over the next three years, huge [00:58:45] swaths of unknown things about humans are going to be unleashed because we've had [00:58:50] enough data from a few years of monitoring and now the AI self learning systems are just coming online.

So it's [00:58:55] like, The great enlightenment of the human condition happening because of [00:59:00] these biohacking technologies combined with hard, you know, hardcore tech.

[00:59:04] **Matteo:** [00:59:05] There is another interesting thing here that in the past we had [00:59:10] consumer devices and we had medical grade devices, right? Medical grade devices [00:59:15] were looking, now they look ugly.

They were terrible, terrible user experience. We [00:59:20] didn't want to use them. Think of CPAP machines. Consumer devices were not accurate enough. [00:59:25] These two things are merging, right? Your Apple Watch is [00:59:30] becoming a medical grade device, ASLib will become a medical grade device, and they still look great, [00:59:35] and is a product that you can use every day with a great interface UX and UI.

So [00:59:40] this is how the world is changing. See you next time,

[00:59:43] **Dave:** on the Human Upgrade

[00:59:44] **Matteo:** [00:59:45] Podcast.