



How to Avoid Endocrine Disruptors | Dr. Leo Trasande

[00:00:00] Guest Intro - Dr. Leonardo Trasande

Darin: Hey, everybody, welcome to the show. This is Darin Olien. This is The Darin Olien Podcast. How are you? I am stoked about this episode because this has become a good friend, Dr. Leo Trasande. He is the Jim Hendricks, medical professor and director of the Division of Environmental Pediatrics, and vice chair for research in the department of pediatrics at NYU School of Medicine. He has worked in global public health, primarily why I'm so excited for this conversation because I've been diving into my book, my fatal convenience book. One huge chapter is on all of the issues going on in the clothing industry and the home and everything else. What keeps popping up is these persistent endocrine-disrupting chemicals. Dr. Leo is an expert in that because he wrote this incredible book that I consumed ravidly, called Sicker, Fatter, Poorer, The Urgent Threat of Hormone-Disrupting Chemicals to Our Health and Future . . . and What We Can Do About It. So we're talking clothing, we're talking personal care, we're talking shampoos and conditioners, we're talking carpets, mattresses, and television sets. What? These endocrine-disrupting chemicals are so pervasive in the environment, it scares the living crap out of me. That's why I'm diving into it. That's why I've dedicated the last six months to learning about it. Dr. Leo, we unpack this a bit but don't be depressed, we are doing things incorrectly, for sure as a society, without a doubt. But in order for us to change it, we need to face it. We need to look at it and understand it. First off as someone that wants to take responsibility for your health and your life, and I know you are one of them, and our children, and the people we care about, we have to know what is going on. We have to know where we're being exposed to this stuff. That's what we're going to be talking about today. So kick back, relax, or go for a run, or go for a walk, or move, whatever you want to do, but enjoy this next and very, very important conversation with my good friend, Dr. Leo Trasande.

[00:02:51] Podcast Intro

Darin: You are listening to The Darin Olien Show. I am Darin, and it is my life's mission to find and share healthy and sustainable ways of living. In this podcast, I talk to inspiring people and professionals from around the world to uncover ways that we as humans can improve our lifestyles, strengthen our mindsets, and take better care of this beautiful planet we call home. If you're looking for motivation to take the next steps towards a happier, healthier life, then you're in the right place, and I'm stoked that you're here. So let's do this. This is my show, The Darin Olien Show.

[00:03:35] First Part of the Interview

Darin: Well, dude, thank you. This has been such an interesting journey, kind of learning about this. Then just funny how life works because I was gobbling up your book and all of the amazing research. For everyone listening, it's Sicker, Fatter, Poorer: The Urgent Threat of Hormone-Disrupting Chemicals to Our Health and Future. And just for the audience here, you and I are lines connected through Footprint who we're a big fan of. They're charging to



get the single-use plastic faucet turned off in the world for better alternatives, so that's a thing. The last time we saw each other, we were in Phoenix and you gave a great talk on this topic and bring the invisible more visible. I was talking to a friend of mine the other day and I was like, well, if you saw your shampoo with smoke coming out, you could see it you're like, I don't want to put that on my body, but it's invisible. And we're assuming that the products we buy are fine for our health to make our skin glow. It's just utterly crazy, and I think you and I could probably speak for about a month on this topic pretty easily. So, your incredible background, pediatrics and then into the environmental health space and then deep dive on the research and doing your own research and gobbling up the research and dedicating a huge part of your life to not only endocrine-disrupting but other environmental issues that we're facing, how did you get there and what were those moments that you kind of was like, we have a problem, and I need to jump in here?

[00:05:29] How Dr. Leo became interested in endocrine-disrupting chemicals

Dr. Leo: It wasn't a straight and narrow path, that's for sure. I feel as though I tripped into the field of environmental health, let alone endocrine disruptors. The story really begins when I applied to medical school, and this was the era of the Clinton health care debate. I kept getting these interview questions where people would say, well, what do you think of the Clinton Health Care Plan? And I would say, at first, you try things that you would say if you're interviewing for medical school and didn't want to insult some practitioner who was making mucho dollars doing what mostly he back then or she was doing. At one point, I stopped in the middle of an interview. When I got this question and asked the interviewer, well, help me understand what do I learn about healthcare policy in your medical school?

Darin: This is trying to get into medical school.

Dr. Leo: Yes, it's trying to get into medical school. Totally dumb move because I don't think I got into that medical school because the question I asked was completely turning the tables. But it really made me realize, wow, I don't know anything about the policy-making process, so I decided to dig in further. I had gone straight from college to medical school, so I was young, and I could take a year off. So I took a year to go to the Kennedy School of Government. And boy, I had my head turned upside down, just learning the world of healthcare policy and just policy in general. I realized that there was more out there besides medical practice. I got what I called capital fever. I decided to do my residency because that's what you do when you're a doctor to get your full certification and finish my pediatric residency, wonderful program learned a ton. I still wanted to be a pediatrician, but I was smitten with health care policy. So I decided to go work for then-Senator Hillary Rodham Clinton. I was told to work on children's and environmental health issues, and I figured I had the children's health part out, no problem. The environmental health part, I figured I would pick up as I go. Boy, was I in for a surprise, and I had my career transform. I loved it. I ate it up. I realized how much impact we needed to have in this space because as you said, what is invisible is assumed to be fine. So there's this notion I learned in medical school called only the dose makes the thing a poison. It's by the Swiss philosopher, Paracelsus, Theophrastus von Hohenheim is his name. I love saying that because it's just so obnoxious. But the reason I love saying it, too, is that his notion lasted 500 years. You talk about something during eight lifetimes after you basically. Sure, he self-experimented in all sorts of poisons, did all sorts of weird things to himself, which is what the physicians in that era did to



themselves, but he made some fundamental notions that stood the test of time, so hats off to him. But one of the things I realized is that what little things do matter. And the basic notions underlying what I was taught in medical school were already unraveling by the time I was coming through. We now have 500 or so scientific studies that tell us that not everything is drawn in straight lines, particularly when it comes to hormones in our bodies. We assume a little bit of everything is fine, everything in moderation, but what we know now is at the lowest levels of exposure, you can have the biggest effects of toxic chemicals in our daily lives. It's not just chemicals in our shampoos, our personal care products, and electronics, furniture, aluminum can linings, thermal paper receipts, plastics, it's lead, mercury in fish, pesticides. All of these chemicals, we know that when you're down at the lowest levels, it's every little bit is that much more important. Then chemicals don't follow the straight lines because the hormones in our body behave differently and different switches are turned on and off at different levels of exposure. I like to call it as a gas pedal and a brake. Sometimes, you've actually pressed both the gas pedal and the brake, and the response drops whereas before, it had gone up and up and up, suddenly, it goes down because you started the break. Then the pedal stops working, and then you have the response come back up over time. So it's a U-shaped exposure-response function. The nerd way of saying it is nonmonotonicity. But all this stuff means is you can't extrapolate the way we assumed was true from high dose experiments in animals to what low levels would do in people for the perspective of safety. You have to imagine our whole scientific underpinning about what we assumed was okay for human health has just blown up. It's not only the dose that makes the poison, it's timing, it's other exposures, it's genetics. It's all of these other factors. So it was that kind of experience that really made me realize that I had a reckoning to have, and I had us a unique contribution to make in helping us do the right thing for the general public.

Darin: I am horrified. The experimentation that we're doing without safety is just utterly horrifying. I want to unpack this. People are going to be like, what the hell are they talking about? What are EDCs? What are these things? But I want to touch on all of these aspects because policy, environmental, 60,000 to 80,000 chemicals created every year raining down on us and all kinds of ways. So what you were originally saying about dose, we have no freaking idea what we're doing with all of that exposure all the time under whatever conditions. So why don't you break down what I guess in this context, what an endocrine-disrupting chemical, and then we can start talking about where they show up.

[00:11:44] What are endocrine-disrupting chemicals? And where do they show up?

Dr. Leo: So let's start with what endocrine means. Endocrine is hormones. Hormones are natural signaling molecules. They underlie every basic biological function for temperature, metabolism, salt, sugar, and even sex. When you're talking about endocrine disruption, two things, you're talking about these hormones are natural molecules. Endocrine disruptors are synthetic molecules that are not made with the body's hormones in mind. What they do is hack that signaling system, and they run amok. With these synthetic chemicals that are not designed with the human body in mind, it's not surprising that all of us are affected, and that all our organ systems can be affected in different ways. It's just a matter of timing, level of exposure matters, but it's about all these other factors, what else you're exposed to in your daily life. What little we know suggests 1800 chemicals are for sure endocrine disruptors. But less than 5% of synthetic chemicals in our daily lives are tested to date for endocrine disruptors. So there's this tip of an iceberg problem. What we know the most about are five



categories of chemicals that are packing our hormones: pesticides use in agriculture, phthalates used in personal care products, cosmetics and food packaging, bisphenols used in aluminum can linings and thermal paper receipts, flame retardants used in electronics and furniture, and the brominated flame retardants. The brominated flame retardants, phthalates, the bisphenols, and the pesticides. Then the fifth one was made famous by Mark Ruffalo through this movie, *Dark Waters*, the perfluoroalkyl substances or PFAS used in nonstick cooking oil and water-resistant clothing. So when you rattle off all these uses, you're talking about everyone being exposed. This isn't a one-percenter issue. This is a 100-percenter issue. So if I drew your blood, and you drew my blood, we probably both have detectable levels of multiple PFAS in our bodies. If you actually bring 100 folks in from 6-year-olds all the way to 99-year-olds, we all have it. The sad reality is these endocrine-disrupting chemicals are detectable in nearly all of us. So phthalates for example, 95% in national surveys done by Centers for Disease Control and Prevention, and these are at levels that are known to be toxic to hormones in our bodies. Pesticides, organophosphate, pesticides, same thing, flame retardants, and the problem is that some of these chemicals stay in the body for years and years. The PFAS are notorious for it because the body doesn't know how to excrete it. Or if it tries to excrete it, it reabsorbs it because its body is designed to pick up some of those molecules and take them back. When those things stay around and they bioaccumulate and they're persistent, that's where there can be a unique set of problems.

Darin: So that's where we think about people eating fish, and then they have mercury and then there are some chelating protocols, you can bring that down and maybe stay away from fish, and this is a whole different thing. This is bioaccumulation. For example, phthalates are the plasticizers and everything else, so virtually packaging and you're wrapping your food and your water bottles and all of that stuff. What can we do to minimize that phthalate exposure aside from the obvious?

[00:15:17] How to minimize your exposure to toxins that mess with your hormones

Dr. Leo: So the great news is that there are safe and simple steps we can walk through to reduce our exposure. We're not going to zero this out right away, that's going to probably require some additional change through our government. But I have a lot of hope because study after study, low income, high-income population shows you can reduce your phthalates reliably. And the good news about phthalates is they don't stay in the body for the same length of time. So you can get them out of your body in two to three days. Then if you keep on doing the right thing and follow these safe and simple steps, you keep your exposures low, and you'll see your hormones get better in the medium term. You'll see your chronic disease risk profile drop over time. So let's renegotiate our relationship with plastic fundamentally. We need to just reduce our use of all types of plastic in particular glasses, stainless steels are a great way to go. Particularly if you're machine washing or microwaving plastic, that's a no-no because these chemicals like phthalates are not covalently bound to plastic, so they leach relatively easily with heat. Then polymers break down into monomers. That's what a plastic is. It is a polymer. It's just this long chain of the same damn molecule all the time. If you use heat or harsh chemicals, you'll break those bonds and those chemicals will absorb into foods too. There are also certain recycling numbers to avoid. Three is for phthalates, which we've talked about already. We can talk a little more of the specifics of the effects. We haven't gone into that as much. Six is for styrene, a known carcinogen, and



seven are for bisphenol, synthetic estrogens that are known as what we call chemical obesogens. Chemicals that literally make us fat.

Darin: People are going to be like, I've never heard that term in my life. I've been trying to lose weight. What are the obesogens and how can I stay away from those?

[00:17:07] Obesigans and how to avoid them

Dr. Leo: We used to think calories in, calories out, that's the core of maintaining a healthy body weight. And nothing I'm gonna say here minimizes the importance of a good diet and good physical activity. However, let's take the PFAS as a good example, we'll come back to phthalates. So PFAS in a study of adults who had lost weight through a healthy diet and good physical activity, they measured their blood samples for those PFAS, and then they follow the population over time. The ones that gain their weight back independent of their diet and physical activity were the ones with the higher PFAS. Then when they look further they asked why, guess what, lower resting metabolic rate. So the body's thermostat was turned the wrong way. So you imagine on a cold day, you're supposed to shiver or burn energy somehow to heat up, that body was saying no, no, no, no, I need to save my calories as fat. So net, even though they were doing the right thing with their caloric balance, the body was miswired by these chemicals to do the wrong thing.

Darin: Wow. Where do you find the majority of the PFAS today? I mean, people are still using those damn pants. We should throw those things away. I don't even know a safe way to throw those things away because then we're talking the environmental exposure too. So that's number one for sure. And where are some of the other exposures that people can eliminate?

Dr. Leo: So stainless steel and cast iron are really your cookware go-tos. Sure, it needs a little more elbow grease, it needs a little more olive oil. Last I checked, olive oil was still good for you and your diet from a heart-health perspective. Then we all have this knee-jerk reaction to go buy cortex or clothing that have PFAS, and the companies have been very reluctant to shift their manufacturing practices. But this is where I have so much hope because we as consumers have so much power with our wallets and pocketbooks so that we can drive the change we seek. So you see companies, major clothing manufacturers, starting to say whether their clothing has PFAS or not. I can actually go on various websites now and that's actually an option. PFAS-free is starting to show up. People are starting to follow the lead. We had this recently with the brominated flame retardants. They were in all sorts of furniture and electronics from 1970 to about 2013. It was the American way of trying to stop the spread of fires except it was doing us no good because it didn't delay the spread of fires or save lives. When California changed its law to switch back and not require flame retardants, they required a label notifying them flame retardants were added. So companies were being asked what is on your label. All of a sudden, all the companies shifted over to flame-retardant-free. That's what gives me so much hope.

Darin: It's things like this, like having these conversations and bringing out this information. It's weird to me, Leo, that this even has to happen, that you have to write a book like this and do all this because that's another thing that I have. I want to get into it because what the hell is flame retardant doing on my television set and my pillow and my mattress and my



couches, what the hell is that? I have strong reactions to what our regulatory bodies are actually freaking doing. Because for me, PFAS really screamed at me when Oral B was cited in a research article and it has PFAS on that Glide dental floss. I was like, what the hell is that doing in my mouth? So it's important to talk about this stuff to get it out so that people can realize, and personally I just want to know what the hell's going on? I've seen articles written and they acknowledge. FDA can't just even acknowledge a carcinogenic potential, but then they kick the can, or it's maybe inconclusive, and they kick the can down the road, and they still allow products into our world and into our environment. I know this is a massive topic, but who is, aside from EWG or Campaign for Safe Cosmetics or these great organizations, why the hell are these other organizations not doing their job?

Dr. Leo: Let's take it in pieces. You're totally right, and I don't blame you get lathered up over this. Remember at the top I talked about as a medical student being told, a little bit of this, a little bit of that, no problem, everything in moderation. Well, that mantra carried its way all the way through psych toxicologists, epidemiologists, even medical people such that my colleagues that I work with here at NYU, they didn't get much of this training at all. The Endocrine Society was the first scientific report putting this issue on the map. It's 2009, the World Health Organization only put out its first report in 2012. The Endocrine Society put its second report in 2015. The American Academy of Pediatrics put its report on 2018. So what I'm saying is that people are catching up, but scientific paradigms take a long time to shift and that's what's frustrating. Unfortunately, the people in these agencies who've been there for 30 years, they're used to, well, I was trained one way and I'm stuck in it. So some of this is not intentional industry greenwash or worse than greenwashing. Let's face it, there's a lot of money at stake in these companies, and that's why they will fight the science as much as they can. That's the other issue. These diseases that are due to hormone disrupting chemicals cost us ultimately we pay. And we're actually footing the bill of other people's profits because endocrine-disrupting chemicals cost the United States \$340 billion a year. 2.3% of our gross domestic product goes right out the window because of these chemicals, and that's based on less than 5% of the known EDCs, the subset of diseases due to the few chemicals we studied, and a subset of costs due to the few diseases due to the few chemicals we've studied. Yes, 2% of our gross domestic product, were being taxed by the chemical industry. Those are two big problems underneath the surface here is there's a lot of money at stake to changing our ways but there's also just some basic scientific resistance, and that is going to take some time to work through but you're seeing the scientific and medical organizations really step up their game.

[00:24:08] Caldera Lab Ad

Darin: I never used to give much thought to my skincare routine. There weren't enough brands making products that I would actually feel safe to apply to my skin and that is the truth. And on top of that, the idea of finding a routine that would suit my skin and my schedule was just too much effort. I just blew it off. Nobody has the time or money to try a bunch of different products, look into them, and of course, I'm looking into every single ingredient and most of them are junk until you find one that actually improves your skin. That's why finding Caldera Labs was a blessing for me. They made it easy for me to take care of my skin in a way that fits my routine and my lifestyle. I cleanse my face in the morning and at night using the Clean Slate cleanser. Then in the morning, I use their base layer moisturizer to keep my skin nourished throughout the day. And at night, I use my



favorite product from them, The Good, which is a serum that just leaves my skin feeling incredible. It's that easy. Their products are made from completely clean, nontoxic ingredients. And my favorite part about it is their sustainably harvested botanicals, and they're going above and beyond organic and their incredible extraction processes to create the best skincare that actually works. My skin has never felt or looked healthier. If you're ready to take your skincare to the next level, Caldera is offering my listeners 20% off when you head to calderalab.com/darin and use the code DARIN. That's C-A-L-D-E-R-A-L-A-B dot com forward-slash Darin, D-A-R-I-N. You will not regret it.

[00:26:16] Second Part of the Interview

Darin: I have read a few things in the Endocrine Society. It has 17,000 members and they're all MD scientists, researchers, over 100 countries. So that is power, but the government agencies, the slow roll, whether it's conflicts of interest, whether it's naivete, where it's both, where it's these old policies, old procedures, and then muscled by this profit side of things, whatever it is, people are suffering. That's the downside of this thing and you know more than anyone. Let's break this down a little bit in terms of what is actually happening because children, for example, are so susceptible to all of this stuff. Their immune systems aren't developed. They're getting hit with foreign chemicals from every direction, water, air, food, clothing, binkies, you name it. So let's break it down. People might be listening here going, yeah, what are the symptomologies, what are the problems that seem to show up?

[00:27:25] Signs of exposure to endocrine disruptors

Dr. Leo: The first read we had of a problem was kid's brain development. The thyroid gland is a lifelong organ that does so much. So brain development in babies is crucial to thyroid hormone. We as pediatricians, check the heel stick on a newborn baby at first to make sure they have proper functioning of thyroid hormone because you can replace thyroid hormone and keep the kid from having a lifelong intellectual disability. Well, what we know now is thyroid hormone in pregnancy is crucial for a baby's brain health because the baby's thyroid hormone does turn on till the second trimester of pregnancy. Even in the clinically normal range, this is stuff and OB can't tell you is a problem, they look at the results and say, it looks good, but pesticides and flame retardants shift thyroid hormone function just a little bit and those small shifts lead to attention deficit hyperactivity disorder, autism, and cognitive deficits. We've already talked a little bit about obesity, but let's go a little bit further. So these bisphenols that we talked about aluminum can linings and thermal papers in receipts. They make fat cells bigger. They disrupt the protein that protects the heart and they are synthetic chemical estrogens, so it can have sex-specific effects on body mass. Phthalates change how our body expresses its response to fats and proteins through the expression of certain proteins in the body. So let's say you've had a good workout, you've had a good keto or protein, whatever your diet of choice is, and you've set yourself up for making muscle mass. Now, phthalate say we're putting that into fat. So it just totally perverts the whole notion of what you're trying to do to make a healthy life habit. Then when it comes to heart disease, this is frightening to think about, phthalates antagonize testosterone. Testosterone is not just crucial for potency and fertility. Low T is a predictor for or a marker of adult cardiovascular disease. We did a study recently that suggested 100,000 US adults die each year because phthalate levels reduce their testosterone function or directly contribute to death from heart disease. This isn't just a lifestyle matter. This is a life and death matter for folks out there.



Darin: You're saying that endocrine-disrupting compounds are connected now to heart disease and well, connected low testosterone, which is then connected to heart disease. Again, we're talking about the regulators of the body, the hormones, the endocrine system. So it's like, you have a car and you can't drive it, you can't get anywhere or you're off-road and you're in a car that's not supposed to be off-road. It just derails in an infinite amount of things, which is great when you're able to do some studies and figure out some of the things but it's got to be impossible to try to understand all of these things because it makes me think about the neutering of our society, the motility of men going down, the pre-menopausal, postmenopausal, pre-pubescent, all of that stuff. Unpack a little of that stuff of what you're saying.

Dr. Leo: We're seeing an acceleration of puberty. That could be very problematic because early puberty is a strong risk factor for breast cancer in young girls. We know that particularly, we've seen increases in certain male reproductive birth defects, where the urethra, the opening from the penis is in the wrong place.

Darin: That's a direct result of EDCs and stuff?

Dr. Leo: Unfortunately, yes. We've seen increases in testicular cancer. Now, sure, testicular cancer is much more curable than it was 30 years ago, but unfortunately, we've seen increases and any cancer is scary. We've seen EDCs related directly to breast cancer and other conditions. So prostate cancer has been associated with pesticide exposure among workers. It's not as though this is again, just in one organ system. This is something that it's so inconceivable to think that a variety of chemicals could have this broaden effect, but when you're messing with the master signalers, think about a car now these days is so electrical, and that electrical system just gets zonked. You could have things affecting your transmission, your steering, your tires even, that's the weight or reason to this is that you're messing with something just fundamental to basic human function.

Darin: It's hard for some people to understand that because we're in this reductionism kind of world. We want to reduce everything down so that our tiny little brands can try to understand it. Now, there's no-fault. We do that all the time but it's like, if I take this, I will get that, if I do this, I will get that. It's a cascade effect. Again, now there are even more and more plastics and things in like skinny jeans and stretchy pants and formaldehyde and more phthalates. Then you think about the big horrifying thing where you talked about heat. You have food you're ordering, they wrap your hot food in plastic, you drive home, it's been sucking in more and more phthalates, and then you're washing your hair, your deodorants. It's everywhere, man. So what do you do to minimize your exposures?

Dr. Leo: I don't eat canned food because that comes with bisphenols. The companies are saying they've replaced out the bisphenols, but they haven't shown the data to prove that they're free. Even BPA-free is not necessarily bisphenol free. We know of 40 or so are formerly known as BPA, like BPS is as estrogenic, as toxic to embryos, and as persistent in the environment.

Darin: They can say that BPA free, but then there are 40 other ones that they're saying, well, yeah, it's BPA free, so we're using this other chemical that's potentially as dangerous.



Dr. Leo: They can be down with BPZ, if you know what I mean. I'm gonna spin-off of another song, but you know, they have BPP, BPAF, either the list goes on and on. The regulatory framework has not adapted, the government hasn't adapted to a framework that protects us the way it should. Saying no to those thermal paper receipts is another way to avoid contact because that glossy resonance called these bisphenols, they absorb right into you. We've talked a little bit about phthalates from the food perspective, but let's talk about cosmetics and personal care products. You don't need a PhD in chemistry to read the label. You can look for the letters phth, that's the base word of phthalates. But you look for fragrance you see a problem. Fragrances a big loophole for a host of chemicals that the industry just can say it's a trade secret, we won't tell you what's in it. They can have all sorts of chemicals in it that could be of concern. Eating organic is another step that we can take and that is known in high-income and low-income populations to reduce your levels of pesticides. People say to me, Leo, if you're from a low-income community, you can't do that. That's not going to work. You're forcing people to make ends meet in awkward ways. Well, the fact is that we've seen an explosion in the market share of organic foods such that the prices of organic food have come down such that side by side the big box stores are putting the conventional organic foods together in similar price points. So we've come a long way. We've already talked about nonstick cooking materials going the wayside or stainless steel or cast iron and simply opening the window and recirculating the air. This has become much more aware in the era of COVID and ventilation. But there are persistent organic pollutant dust from electronics and furniture that accumulate on dust in the floor. A wet mop is really good for that, or even carpeting. So just even opening the windows and recirculating the air can enhance the resorption of those products out into the outdoor air.

Darin: If you're in a colder climate, it's good for the mitochondria to put yourself under some stress.

Dr. Leo: That's one way for sure.

Darin: I'm from Minnesota, so I know what cold feels like. We're all on this journey. It's awareness first. Awareness then we can follow with action. And we can't just change everything right away, but looking at our clothing, looking at our conditioners and our shampoos and this vague fragrance, and that's such a weird thing for me. So the point here is we need to become aware of the work that you've done and this invisible world that unfortunately is not being regulated at a rate and a speed that's required, and we're being affected by it. Maybe some of the mysteries that people are suffering from, maybe this is it because if I can't lose weight, and I have attention deficit disorder, my child is suffering, or I have mood disorders, this could be part of the issue.

Dr. Leo: The fact is that a lot of people come to me saying, well, I already have this, so I don't have to worry about it. I'm already stuck with my problem. But the fact is, we know that the trajectory of certain chronic diseases is mediated or explained by changes in hormones. There are short, medium, and long-term benefits wherever you are in your journey, and everyone is affected. We talk about kids being the most vulnerable, but we talk about prostate cancer and breast cancer, we're talking about adult obesity, adult diabetes. Us adults who've had a number of years of being exposed to these chemicals, I'm a kid of the '70s, I probably was exposed to a bunch of these for a long time. I'm still doing what I need



to do because I'm thinking about the future. I'm thinking about what I can do to have a healthier life going forward. So it's not looking backward, it's looking forward.

Darin: And the body is resilient. So if we make these changes, and again, we are emphasizing the dose-response here because think about it, everyone listening has live their life at least two decades. We know how fast time goes by, and it's also a great thing to integrate. Integration with knowledge is wonderful because you're like hey, man, I feel better about brushing my teeth like this and using this better shampoo and more and more products. To your point, the population and the choices are now expanding as a result of awareness. So that's encouraging that there are more choices available that don't have some of these experimental issues.

Dr. Leo: And people focused on climate change these days. The fact is that endocrine-disrupting and climate change have this common origin, fossil fuel production, and consumption. Many of the feedstocks for plastic and for these endocrine-disrupting chemicals are from fossil fuels. Ultimately, they're from methane, ethane, etc. So there are co-benefits to cooling the planet and reducing your chemical loads. You definitely need to address both. I mean, I argue openly that endocrine disruption is possibly the second greatest public health challenge of our time because if we cool the planet and we don't address this, we're going to be able to live on the planet, but we won't be able to enjoy the planet because we'll be sicker.

Darin: Yes, and I like that you just made that connection because we talked about the plastics as it relates to the horrific pollution on this planet. Well, that's also neutering our waterways, our streams, our rivers, our oceans, and stuff like that. They're endocrine-disrupting the environment. So the less and less we buy, the less and less exposure we have, and the less and less pollution that it's actually having on the planet. If 8 billion of us changed in our daily habits, change that's trillions and trillions of bottles of this and bottles of that and go away, or at least slowly go away over time.

Dr. Leo: That's what gives me the biggest hope is that we finally become woke to this notion that the environment can challenge our sustainability on this planet as species. It doesn't have to be gloom and doom. There are a lot of these safe and simple steps we can all take. You don't have to do everything at once. You build one thing at a time on most safe and simple steps, and you can see the short, medium, and long-term benefits at reducing exposure.

Darin: Amazing. Hey, so what are you working on right now? What's one of the top of your focus right now?

Dr. Leo: Well, a lot of what I do these days is documenting not just what these chemicals do to people and individuals, but a lot of what I've devoted my career to is the health policy background. So it's really trying to translate what we know because yes, I'm going to tell you to do what you can do now and don't worry about the policy framework, but I'm in it to focus on that policy framework because that's going to help us get the job done. In Europe, seeing this huge change in policy, such that we don't necessarily regulate based on how much of something is bad enough to hurt you. If they find something in Europe that disrupts hormones, it's banned for biocides and pesticides in particular. And we've come a long way



in that respect, so a lot of the cases I'm making all the time is saying to policymakers, okay, you don't do anything, this is going to cost your taxpayers and your taxpayers are going to be pissed because they pay ultimately as a result of these exposures.

Darin: Well, that's gonna help you. At least someone's making those changes that are more rapid pace, and then you can use the data and the actionable things that the Europe and the EU is doing, and put more pressure, hopefully on the US and bring out that information. So just dude, keep me in the loop. I love to continue to push this as much as possible because it's an experiment that we don't have to do, we don't have to suffer from, but we are. Again, like with anything, with any issue, whether it's your personal issues or bigger issues, you got to face it. We have to turn and face it and look at it or else, this biological chemistry set that we get to use is dealing with it. So if you don't want to do it in your head, your body, your children, your family is being affected by it. So I'm a big fan of knowledge, turn into it, let's face it, big business. You and I have both met great people and big companies who are wanting to do the right thing. It's more and more of that, that we come together and just like what we experienced in the research that was shown at the Footprint Conference. The consumers have a level of stress from lack of choice on some of these products. So when you ask them, I don't want to buy this plastic bottle, but I need to because I don't have another choice. So consumers want it, so I have faith in that as well.

Dr. Leo: If the big companies don't change their ways, they're going to lose out. And we're already seeing that in some of the companies are doing the right thing. It took a study of just five buffet-style food packages to get PFAS out of buffet packages in two major supermarket chains. Five, that's not a study published in a scientific peer-reviewed journal but boy, that had a whole lot more impact and things like that are gaining dust on my cabinet back there. That's what this is ultimately about. It's not just about doing science to have things on a poster or a wall or whatever that I published. It's about doing the right thing and seeing the change in people and improving their lives. That's what this is about.

Darin: I love that. Well, again, it's such a pleasure, Dr. Leo. Thank you for this time. Keep me in the loop, dude. I'm happy to help in any way that I can and just keep doing your work because it's definitely needed and I'm grateful for your work.

Dr. Leo: Always a pleasure, Darin. Love talking to you anytime and hoping to connect back up with you in person soon.

Darin: For sure. Sounds good, man. Thank you, brother.

[00:44:39] Podcast Outro

Darin: Thanks for tuning in to this episode of The Darin Olien Show. I hope you took something valuable away from this conversation that will help improve your life in some way. If you'd like to learn more about my incredible guests, you can find all of their information in the show notes on my website. If you enjoyed this episode, or even you didn't like it, please rate this podcast. The team and I value your feedback so we can continue to give you the most value possible. We want you to get the most out of every podcast. So please rate, subscribe, share anything you feel called to do. I truly appreciate it, and I love and value your support. So, thank you, and I'll meet you in the next episode.