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Hi everyone, today we're going to talk about BPA in plastics, and we also going to open up discussion within other types of chemical compounds. I think in healthcare, there's been an emphasis when you look at toxic chemicals, where everyone's really focused on things like mercury and lead. Then there's everyday chemicals that we get exposed to all the time, that really have effects on us especially over time. It's important to really consider sometimes some strategies to decrease your chemical load overall, to maintain your health, just like you would decrease strategies to reduce sugar, or inflammatory foods, or cigarette smoke or whatever it may be, to improve your health. Now, as most people know, BPA in plastics have gotten a lot of attention for being toxic and producing health problems. In states like California, they have to actually put on labels in products that have BPA and then this can cause some potential issues with reproductive health.

For most people that have BPA exposure, they don't really notice any symptoms at all. But when you're looking at cases, or people that are suffering from things like infertility, people that have chronic inflammation, who have autoimmune disease or parents that are working with children that may have some developmental disorder conditions, then trying to reduce your overall plastic burden can be very important. One of the first things to understand about plastic products is that they contain a chemical called Bisphenol A. Bisphenol A has been found to be what's called an endocrine disrupting chemical. It also is being classified more recently as what's called an obesogen chemical. Which means that they can help promote dysfunction and metabolism to make it easier to gain weight. There's research that shows that it's a major factor in immune activation.

I've actually published several scientific papers on my own research with Ms. Denali, which I'd like to share with you. But let's just go over how we get these exposures to BPA. BPA is really found in plastic products, so the most common source is plastic bottles. If you ever look at the receipt, you get the ink on receipt paper is Bisphenol A. They coat inside of cans with Bisphenol A. There's actually a Harvard School of Public Health study where they had people just consumed two cans of tomato soup a day over a very short period of time, their BPA levels went up dramatically. People will also get an extreme amount of exposure to BPA, from drinking through coffee lids. Plastic products and even tin cans that are coated with BPA is really the most common source of exposure, so we all get exposure. Then bio-monitoring studies done in the US have found elevated levels of BPA in about 93% of the population.

The question comes up like, so what? Well, let's talk about that. Well first of all, the key thing to remember is that we all get exposure. But we can also... and it's also unavoidable to completely reduce your exposure to BPA. However, when you look at



chemicals and you look at inflammatory conditions and autoimmune diseases, there's something to be said about chemical load. Chemical load can have a significant impact on people that have vulnerability. The main vulnerable groups to BPA are going to be again, people suffering from infertility, people suffering from altered metabolism, people that have difficulty with, let's say losing weight, people that have thyroid disorders, people that have autoimmune diseases. These are the groups where BPA can be more of an issue than, let's say other people. Now when you look at BPA, there's a couple of things to understand about how much BPA gets released in something.

If you take a plastic bottle and you have something that's very acidic in the plastic bottle, then that product is going to have much more BPA. When you look at for example soda, like Mountain Dew, or Coke, or Pepsi or whatever, those liquids are very acidic. You don't really taste the acid, but they're actually much more acidic than apple cider vinegar or even vinegar itself. It's just that there's so much sugar in there that you don't notice it. But things like soda have an extremely low pH, and that low pH will cause more BPA to be released. If you look at food products, things like ketchup which are very acidic, they will have a greater potential to have more BPA in it because of their acidity, so that's one factor, and then there is another one. For example, like heated Mountain Dew bottle in a gas station is probably going to have a lot of Bisphenol A and BPA in it.

Sometimes when you drink bottled water that's been in a hot environment like inside a car or something, you can actually taste some of those BPA chemicals, you can actually taste that plastic. Can you taste the plastic, you're getting a tremendous amount of BPA into your system. What does BPA do? Well, BPA has some significant impacts so let's talk about its role as an endocrine disruptor first. Numerous studies have clearly shown that Bisphenol A is an endocrine disruptor. What that means is, BPA can actually disrupt different endocrine signaling pathways, and the two main pathways are estrogen pathways and thyroid pathways. BPA has been shown to bind to estrogen receptors. When BPA binds to estrogen receptors, it competes with actual estrogen binding to estrogen receptors, so for some people, the binding on certain tissues could make them have less estrogenic effect.

For other people, when it binds to BPA, it can actually activate the estrogenic response, so it can go both ways. There's lots of variables that impact how the estrogen receptors responds to it. But you definitely don't want to have environmental chemicals that can bind to your own estrogen receptors in your body, and that's one of the key issues with BPA. With a lot of the animal studies that they do, would be the [inaudible 00:06:27] BPA. It's been a major cause of infertility and they can actually induce infertility in animal studies, when they compare it with dosing different animals with BPA compared to controls. Obviously we have limitations in human studies that can be done because of ethics, and taking a group of humans and give them high amounts of BPA exposure to determine if they get infertility or not in a clinical trial has not been done. There have been other types of study designs.



But we do know that BPA is an endocrine disruptor, so you definitely want to look at your BPA a lot if you're having any issues with infertility or any kind of estrogenic imbalance issues. Now, BPA has also been shown to disrupt thyroid hormone production and thyroid hormone synthesis, so it makes the thyroid less efficient to do its normal jobs. If you have a subtle thyroid issue, definitely you want to decrease your BPA load. Then BPA has been shown to act as what's called an obesogen chemical. There's a list of chemicals that have been shown to slow down metabolism, and BPA is one of them. For people that have really sluggish metabolism, you really want to consider reducing your BPA load. Now BPA has also been shown to stimulate the immune system, and there's a paper that I published in the Journal of Autoimmune Diseases, back I think in 2014, where I reviewed all the different mechanisms that have been published and how BPA triggers inflammatory responses, and in particular my recent review paper that I published was focused on autoimmunity.

BPA turns on inflammatory pathways for autoimmune diseases, BPA can cause dysfunction in cells in the immune system that calm down autoimmunity inflammation, so it does all the things you don't want if you have an autoimmune disease. There was a study that I also published where we showed people that have BPA binding antibody, so when you ingest BPA, it can bind to your own protein and then change the protein, and that protein can become a new antigen and cause triggers. There was a study that we conducted and we published in the Journal of Applied Toxicology, where we show that when people start to have chemical reactions to BPA, that they have a high degree of correlation and risk for neurological autoimmunity. We then did a follow up study last year, we looked at patients that can't clear BPA. Some people can't metabolize BPA very effectively, and we used Parkinson disease patients.

Parkinson disease patients don't have the ability to clear BPA very well, and we found that they had significant risk for lab workers that then are associated with early Parkinson's development, which were what are called alpha synuclein antibodies. BPA is a major inflammatory immune trigger, it's an endocrine disruptor and it's an obesogen. The question is, what do you do? How do you deal with the loads? What kind of factors? What kind of things can you use to do it? How do you apply this information? I think the key thing to understand is that not everyone's going to have the same reaction to BPA. The first thing is, just because you get the exposure to BPA, it doesn't necessarily mean you're going to have all these health problems. However, it's not good. It's just like cigarette smoke isn't good, but it doesn't mean if you get exposed to cigarette smoke, you're going to end up with lung cancer.

However, people that get chronic exposure to secondhand smoke do have an increase risk, so I think people that get chronic exposure to high loads of BPA with certain susceptibilities are going to probably have some risk factors associated with it. When you look at BPA, your body has to metabolize it and clear it out. This pathway that's called biotransformation, or people called detoxification in the liver, is how we get rid of



BPA. This pathway is dependent upon a pathway called glucuronidation, a pathway called sulfation and pathway called glutathione conjugation. These pathways are extremely dependent upon a high antioxidant precursor load, so eating lots of vegetables, having lots of antioxidants, having healthy amounts of glutathione, even taking things like [inaudible 00:10:50] cysteine and glutathione can be very important to clearing out BPA. Now, you also want to look at reducing your household exposure to BPA.

Now if you can, you need to definitely avoid drinking out of plastic bottles. If you can get a glass container, or glass bottle or even like a Yeti with a metal container, and just fill up every day and drink out that, that can tremendously reduce your load. You definitely want to avoid drinking through coffee lids, I mean always take the coffee lid off, if you're going to drink something and just drink out of that. Or use plastic coffee container... Sorry, I mean glass coffee containers or steel ones to really reduce your load. The key thing when you're looking at BPA, and if you do have vulnerability to some of these conditions like autoimmune disease, infertility, chronic inflammation, is to just reduce your load. Using non-plastic items in your home is really important. If you use glass Tupperware containers, or it's made out of glass, I mean the top will have a plastic seal, but it's really not contacting the food, just keeping the air out.

You really want to make that transition into those types of compounds. Now, when you're looking at some interesting things about BPA, one of the other things that's important is how it can be a trigger for some people, but not for other people. We did a study also that we published in the Journal of Applied Toxicology, where the title of the paper was, Elevated levels of antibodies against xenobiotics in healthy subjects. We took 400 human subjects, and we measured how many of them... We stratified it to reflect the US population. We wanted to see how many of them had not BPA levels in their blood, but if they had antibodies to BPA. In the study, we found 13% of the people had antibodies to BPA. Which means that when some people get exposure to BPA, they actually have an immune response against it. That's really interesting, because when they look at urine levels of BPA, they find over 90% of people in the US have very high levels of BPA in their urine.

Then what we found in our study is that, we only had 13% having these antibodies, so there's a big difference between just having high levels and having antibodies. There were some people that get exposed to BPA and develop antibodies against BPA, and those people on further research we did, found that BPA can be a major trigger for basically all the major autoimmune diseases in our in-house testing. But the ones we published before have really been on neurological autoimmune diseases. But it could definitely be a factor with things like thyroid or other conditions as well, so that's one of the key differences. One of the key things that can impact that is just how your immune system responds to environmental chemicals. If you're already noticed, you're sensitive



to environmental chemicals like, you notice your skin is reacting when you put on lotions, you can't handle gasoline fumes, you can't handle different types of scents.

You definitely want to reduce your chemical load and you may be at greater risk for having these chemical antibody reactions as well. I've also written some articles on BPA on my website and some of the information with the research that we've done and published at Dr. K News, drknews.com. We talked about some programs related to what's called immune tolerance. Immune tolerance is one of the things that avoids a person from starting to react against chemicals and we have an online course about that, so you can take a look at those things at our website, but those are the key things about BPA. I think for myself, the reason I wanted to do this talk was as a researcher, I've published several papers on this and I have a lot of interest in this personally as it relates to autoimmune disease. Secondly, what I've seen happen with lots of patients that have chronic autoimmune diseases and chronic inflammation, that they're so focused on limiting their diet with food proteins.

They go gluten free, dairy free, autoimmune paleo they keep getting histamine free, they keep cutting out every single food and they make no real attention to reducing their chemical load. The most abundant and commonly exposed chemical that is very inflammatory, it can really cause problems is just as chronic exposure to BPA. Taking the simple steps to just reduce your load, even by let's say 50% or 60% can have a tremendous impact on overall inflammation and in those types of factors as well. People always ask, how do you totally avoid it? And like I said, you can't totally avoid it, you just want to try to reduce your load. We kind of live in a world where you have some degree of exposure with those as well. Those are the key things about BPA. Now, I also want to point out, there's been a lot of new interest in what's called BPA free products, and BPA free products are really just as bad.

Instead of using Bisphenol A, they're using Bisphenol S, and Bisphenol S in studies are now showing, it's just as bad as BPA, and some studies are showing that it's even worse. That it's having a greater endocrine disrupting effect, than actual Bisphenol A. When you read things that say, BPA free and it's plastic, it's still just as bad. Now you have some people marketing things they put on their products, labels like non-toxic plastic, but the plastic they're using is BPS. That started to change because studies are showing them being published in BPS, showing that it's toxic, and as soon as more studies show up on BPS, then they're going to have BPA and BPS free and they'll use another derivative or sub-fraction of BPA, and there'll be the same issues. The takeaway tips, as we take into questions here is, when you're looking at BPA, definitely stop drinking out of plastic bottles.

If you're using plastic containers, anything that's acidic like ketchup, try to use glass instead. Try to use glass containers or metal containers like a Yeti or different containers that are popular these days to drink out of it. If you use Tupperware in your



house, try to use the glass types of compounds. If you are making meals for your kids, try to use those metal food trays that they can take to school with them and bring back. Those are the ways to really reduce your load. Okay, so with those like kind of being the background, I can try to take some questions if people have any, and kind of go from there. Okay, one of the things someone has asked is, please put up a link to providers, and I think Susan posted that. There's a list of providers that have been training with me, my institute called the Kharrazian Institute.

We have almost now 2000 practitioners throughout the world that are learning clinical models that I teach, and the ones that are up to date with all the coursework are listed at [kharrazianinstitute.com](http://kharrazianinstitute.com). There's a practitioner locator there if you're looking for someone to kind of navigate your way through a chronic inflammatory condition with diet and lifestyle medicine approaches. Okay, so let's get into some questions, my wife is here to help me.

Can you show me those...

I have a...

Oh, you-

My wife... This is a good example one of the things, this was given to me by Mark Flannery. This is by a company called Tupkey, T-U-P-K-E-Y, but it's a really easy way to just transfer coffee. The key thing about this is that the lid itself is plastic.

Glass.

I'm sorry, glass.

Oh my gosh.

Sorry, it's glass. Then this is a Tupperware, you see it's a glass storage container.

It's a storage container, it's not Tupperware, it's a storage container.

Then this is a glass Tupperware, of course this has to be plastic to seal it. But the food is only really getting exposed to the plastic portion and these are great. I don't know if you've used... I love Yeti, but they have these metal containers and they keep everything really cold. This is a very large one, you could fill this with water and drink it all day, I use this for myself personally. I try to drink at least three of these a day, big long containers of water. But it's just a great way to avoid this chronic exposure to plastic compounds. Okay, do we have some question?

**They do. Okay, you kind of discussed this but what about bottles and cans that doesn't say BPA free?**

Yeah, I guess the bottle and cans doesn't say BPA free are still BPS. All cans are coated with this BPA or BPS product, so you're going to get some exposure with them.



Like I was telling you there is a Harvard School of Public Health Study where they looked at just having a group of subjects consumed two cans of tomato soup a day for a few weeks, and they found a significant increase in their overall BPA levels. If you're trying to get your BPA levels down, you really want to limit your exposure to canned products as much as possible. Again, it's one of those things we just try to reduce your load, you're not going to completely avoid it, but it's one of those things.

**Okay. Is there something we do or take to detoxify BPAs?**

Yeah, so if you're trying to detoxify BPAs, meaning you're trying to improve your body's ability to clear up Bisphenol A from your body, the main pathway is actually go to the glutathione conjugation, and the most effective way to raise your glutathione levels, and the cheapest way to raise your glutathione levels as far as natural supplements go, just go and get over the counter NAC cysteine. You can begin the NAC cysteine, anywhere between 1000 or 3000 milligrams a day to really get a good support for your glutathione production pathways. You can actually take things like liposomal glutathione or actual glutathione on itself, and those are also great ways to do it.

**Okay. From Sean, what is the best way to evaluate BPA exposure? By the urine, saliva, blood?**

Right, the way that people mentioned BPA in clinical settings and in research settings is when they're trying to look at BPA load, they're using urine testing. Lots of laboratories have BPA urinary measurement levels, and you can see your levels, but they're dynamic. They'll change based on how much exposure that you get. Then the area of research that I was involved with [inaudible 00:21:55], was we looked at Bisphenol A, and Bisphenol A combined to protein and then you can make antibodies against it, and that starts to cause chemical reactivity. You can also have practitioners order that test, there's a panel through Cyrex Laboratories, which checks a list of chemicals that are measured for antibody reactions, and a panel through Cyrex Labs called the Array 12, I'm sorry Array 11 will measure these antibody reactions.

For example, if I'm working with people that have an autoimmune disease, I know they get an exposure to BPA, but I want to know, are they getting antibody reactions to BPA? I'll measure Cyrex Array 11, and if I see that they have high amounts of BPA antibodies, I definitely want to do a few things. I want to try to reduce their overall load, by the things we discussed earlier. I want to get them on things to help clear BPA out of their body, like raising their glutathione levels. Then I want to focus on trying to improve their immune tolerance, so they are not as reactive to chemicals. I've written several articles in online course at Dr. K News, that goes into greater depth about that so that would be the strategy I would use with measuring BPA in my own practice.

Okay, did I say there is something we can use to detoxify BPA? Did I ask that?

Yeah.



**Okay sorry. Okay, what about plastic ziplock bags for vegetable storage?**

Yes, if you're using plastic ziplock bags, I mean you're going to get some BPA exposure. But the point is, don't put anything in the plastic bags while it's hot, if you can. Because if you have heat, you get more BPA released. If you have for example some plastic, vegetables you put in a plastic bag and it's cold, and it's in the refrigerator, one of the key things that releases BPA is heat, so if it's not in a hot environment, you're not going to have as much exposure and load. The worst scenario is an acidic liquid stuck in a can, or a plastic bottle for a long period of time, then you're just going to get a lot of that leaching of BPA into the actual food substance and that's where it's more problems. Yeah, I think plastic bags are going to be some things we all use. You just don't want to take really hot food and put it in there, because that he will release the BPA in there.

**Okay. Is there a risk if you empty the water from a plastic bottle into a glass drinking container.**

If you empty the plastic bottle into a glass container, whatever amount of BPA that was leaked into the water is still going to be there. But at least you're not getting any more, so that's one thing. The best thing is to have a nice home filter system, and then have glass bottles or metal containers to store your water in, and then drink out of those for the whole day, that'd be your best scenario. But of course listen, if you go to an airport, you can't find anything besides plastic bottles, they just don't have glass. Again, there's going to be times where you don't have any other option, but the point is if you have some of these susceptible conditions like autoimmune disease, or infertility or an inflammatory condition, is just to reduce your overall load and get in the habit of trying to decrease your exposure to BPA as much as you can. I mean there are going to be times where you have no other option and you have to drink out of plastic bottle but that's just the way it is.

**Okay. Do you think it's important to have a shower filter/slash water filter in your home?**

I personally think it's really.. The question is about shower filter or water filter, I personally I think it's really important to have the shower water filter. People always ask, what's the best one? I got to be honest with you, I don't know. Because there's lots of different claims out, lots of different things out there. You want to really do your investigation to find one that makes sense for you, but it is important to have a filter. I know in our home we have a filter for our entire home. Anything that comes in water supply, comes into a major home filter system. Then we have a specific filter for just water itself, so we get two layers of filtration before we drink it and then the key thing is our drinking water every day is in a metal container. Our family loves the Yeti bottles because, you put some ice in there and it just stays cold all day.



Yeah. Okay, sorry. Klean Kanteen makes the food grade steel, beverage bottle too. Klean Kanteen-

Yeah. Klean Kanteen is also another great company-

Lunch boxes.

That makes lunch boxes.

**Yeah, okay. Have you read about ozone therapy and if so, does the literature support it's used in chronic viral infections and other chronic conditions?**

Ozone therapy is a different topic than BPA. The reason to be quite honest, a lot of information on ozone therapy and treatment of viral infections, there are definitely practitioners that have anecdotal effects in patients that [inaudible 00:27:11] effects using it. I have never used ozone therapy and I haven't read much about the research on it, so I can't really answer your question very well about it.

**Okay, sorry. Any comment about compounded glutathione spray, like skin on spray?**

As far as glutathione spray, I would guess would have a very hard time getting absorbed, because glutathione is a large tri peptide sulfur amino acid. I just can't imagine that getting through the skin, and even glutathione itself is hard to get through the gut barrier, That's why people use an acetylcysteine. People have to use a liposomal foam glutathione to make a difference. I would be very skeptical to see if glutathione spray would have any real effect at all, other than surface antioxidant protection which may be great if you're trying to decrease the impacts of oxidation on your skin from a surface level. But as far as getting into your system and helping biotransformation and in systemic anti-inflammatory response, I don't think it'd be able to do with a spray.

**Okay, do you still recommend oxicells, and what's the difference?**

Oxicells in the spray, oxicell is a cream that has glutathione in there. It's liposomal glutathione to allow for absorption into tissues, so there has to be a compounding pharmacist helping support a process to transport something like glutathione through the skin, as a way to really support that system. Even oxicell glutathione cream really has benefits on a surface level and tissue level. That's more topical. than raising you're actual glutathione with something like an acetylcysteine or liposomal glutathione.

**Okay. Sorry, what about plastic composite dental fillings? Do they lead overall BPA load?**

Yeah.

How do you address them?



Yes, so here is the thing, plastic composite fillings do have BPA load and here's another thing, the more acidic your saliva pH is, the greater release you have. You can always get some saliva pH paper, you can order off Amazon. You can check your pH, if your pH is really on the acidic side and you can try to change your diet to really change your saliva pH to see if you can get a change. Sometimes change your diet is really hard to change saliva pH because you actually have bacteria in your mouth or infections that are causing that acidic environment. But absolutely, BPA based fillings can cause ongoing BPA release into the body.

**Okay, if BPA and BPA free are both undesirable, should we then just avoid all canned foods?**

Well, yeah. Technically, if you're really trying to want to be a complete BPA free, yeah. Then don't eat any canned foods. But again, it's really kind of about overall load. For example, you're going to probably get exposed to cigarette smoke here and there and it's not good. But it is kind of the way the world works, especially if you're in different countries where people smoke a lot. But you probably don't want to live with a chronic smoker and expect to be healthy. There's some different impacts from chronic exposure, versus occasional exposure. And remember here's the thing too, our body is designed to get exposure to toxic chemicals in compounds on a regular basis and that's why we have biotransformation and detox pathways. We do have some resiliency, we do have some normal, healthy ability to get rid of chemicals, and this is why not everyone that is exposed to BPA will get sick.

If your biotransformation pathways are healthy, I mean we are designed to be able to process a certain degree of chemicals out of our system. The problem becomes, you have a huge load and then you lose your ability for resiliency. People that have chronic inflammation, people have chronic autoimmune diseases. People that have biotransformation, they're going to find pathways totally depleted, when they get an increased load, they don't have that system in place to kind of counteract it and that's where a lot of things go wrong. If you're somewhat healthy, and you're getting some exposure to chemicals, we are designed to be able to deal with it as a species. If occasionally you eat some tomato soup, or canned soup or get a plastic bottle, it may not be as detrimental for you. But when people really have some risk factors and then get a load, that's where you want to be concerned.

**Are beer and soda cans also lined with BPA?**

Yes, beer and soda cans are also lined with BPA, so you're going to get some exposure. All cans, whether it's a canned food, or beer or soda, they're all going to have some degree of BPA in it. Glass would always be best. I can tell you, it's really tough to find glass. You go to the grocery store... and you know, my local grocery store I can't find any water source that is glass. I have to go to Amazon and order glass bottles. Sometimes you just have to take water with you when you go places. Sometimes just



make an effort, like even ketchup bottles. Sometimes ketchup bottles, you have to find the glass ones to reduce your load, if you really trying to find as many ways you can impact it. Neither kicking with BPA is like, you may not necessarily feel dramatically better reducing your chemical load on an immediate basis, but over a period of time you can have impacts on health just like other types of chemical compounds too.

There's a cumulative build up effect that really is the issue and if you get chronic exposure and load, you're actually depleting your antioxidant levels, and you're creating a state of inflammation that may not be good on an ongoing basis.

**Okay. Someone says, I was able to raise my glutathione levels with transdermal spray, her doctor tested for it. Can you test for that?**

Great. Yeah, I can't comment on the transdermal sprays because I don't have any experience. But if you saw your levels raised, then something worked for great you.

**Okay, sorry. What about pool chemicals, chemicals in pools?**

Sure, I mean in chemicals in pools, fire retardants, other things with chemicals we get exposed to are strategies we can also take. I mean, you have to... We can't get rid of all toxins and chemicals, even in the soil we haven't and we've always heard there's some toxic chemicals. Our bodies have always been able to clear some of these pathways out. The different thing about BPA is that, there's a direct connection with BPA to our food supply, to our food sources that we ingest and we drink, and this is where this toxic level becomes much worse. That's why I really want to make an emphasis on this product itself, and it's easy to reduce your load. If you just use glass and steel containers for your beverages, that will be huge.

Let's say you're a Starbucks fanatic, if you drink Starbucks every day and you drink through that lid every day, maybe even twice a day, you're going to get a lot of BPA exposure, and if you just cut that one simple thing of taking off the lid, you're going to decrease this inflammatory compound. If you do that for many months, then your overall load is going to dramatically come down. That's why this is such an important topic, because it's so linked to our exposure to foods and our containers that store food.

**Rosemary has asked, what about canned tuna, is that okay?**

Canned tuna is going to have aluminum and BPA. Again, tuna itself is going to have lots of compounds of the metals and all that. If you become a chemical... You mean, there's a point where you have to kind of look at pros and cons of chemical exposures. We're going to get some, to some level. The point of this talk for me was to really try to discuss how easy it is to reduce your chemical load with some simple strategies, and also be really aware of BPA free stuff, because BPA free stuff is not BPA free. It's just BPS, which is just as bad, so don't feel like you're having any benefits. If you can get the metal containers for your foods, for your kids foods, for their lunches and you can use



metal containers for beverages on an ongoing regular basis and that just becomes what you do as a household, that would be a tremendous benefit to your family's health especially over a period of time.

**Can you detox BPA through Infrared sauna?**

Can you detox BPA through infrared sauna? I would guess that there's going to have some impact on infrared sauna and just detoxification to some degree, but I don't have a lot of strong background in that specific piece of information to answer well for you. I would guess that, it would have some positive impacts.

**Okay. What about mouth guards worn at night during sleep?**

Yeah, some mouth guards worn at night, during sleep? So mouth guards worn at night, the other key thing with BPA is what I call phthalates, and phthalates are what make plastic softer. The softer the compound, the softer the plastic, the greater phthalates release and the softer the compound, the easier it is to actually breach BPA, so mouth guards are a problem. And just recently they banned BPA from kids plastic water bottles, they're just using BSA. But if you have to use it, you have to use it. But it is something that's going to impact total load. For some people, they may not be able to get rid of the plastic overnight, but they can reduce their plastic water bottle exposure. The key thing with understanding the concept of BPA, isn't 100% getting and removing all of it, but trying to find out what parts of your lifestyle you can reduce to make an impact for your health.

For some of my patients that have autoimmune disease, when we do something like Array 11 panel from Cyrex when they measure the most common chemical exposure they have antibodies against, sometimes this person doesn't show up with BPA, but they show up with fire retardants. And for them, we want them to reduce the fire retardant exposure, so we wanted to make sure their mattresses and sprayed with fire retardants, they are not sleeping and getting exposed to it every day. They may need to change the furniture. If they're really sick and have severe ongoing disease, they may need to pull out carpets if they have reactions to formaldehydes and things like that, to really improve their constant daily exposure to some chemicals. But for everyone that may not be necessary, because again they have a healthy enough biotransformation pathway to metabolize these things out of the body without having negative impacts.

It depends on your susceptibility by where you are with your conditions that you may be suffering from, or your patients may be suffering, or friends and family, and then your overall load. That really is the balancing act.

**If your child has to wear retainers with this in it... Well, I'm putting a couple questions together, then what can they do to combat that?**



If a child has to read these retainers, then what do you do to combat that? Have more than retainer, reduce the load however else you can, and then-

[inaudible 00:39:24].

Then if you want to use supplements, you can take things like an acetylcysteine as a good way, or just glutathione as a way to support biotransformation and clearance.

Okay. Did I ask about this infrared sauna?

Infrared sauna?

Yeah.

Yeah, we did.

We did ask that.

Yeah.

**Okay. This is kind of like... The squishy of the plastic, like the softer the plastic, is it worse than [inaudible 00:39:55].**

Yes, the softer the plastic, the worse it is. Not even just for the BPA, but for the phthalate components. Phthalate is what softens and plastic and they have their own endocrine disrupting effects. The softer the plastic, the worst effect. Softer plastic that in combination with an acidic compound, in combination with heat is terrible. A lot of these chefs are now taking foods, and they're putting them in a plastic container and the food is already acidic, because let's say it's a tomato or something, then they heat it and then they now get the phthalates and all those. Again, if you have a Michelin star chef cook that for you on a special dinner for an anniversary, you're probably going to be okay. But that constant exposure to that type of behavior can really increase your load.

**People are a little confused. Some saying, I thought plastics were okay as long as you don't heat them, or 'freeze' them.**

Sure overall plastics, what okays depends how you define it. It depends on how you define it's okay. If you don't heat plastics and the plastics aren't storing something that is acidic, you're not going to have as much release, okay. You're still going to have release. That's why you always still want, if you're trying to reduce your BPA load, you definitely want to move to steel or glass to make a difference. Even ceramic would be a good option.

**Yeah, okay. Is there a way to determine how well detox pathways are working?**

Is there a way to determine? Yes, you can do a urinary BPA load. I mean, just measure your urine BPA, and then if you're taking things to help detoxify BPA, like lots of glutathione, and sweating and whatever things you want to do, you should actually see



in the very early cases, your BPA levels in urine rise, because you're clearing them out. Then after a period of time, you just see it go down. The best approach is to really reduce your load in combination with taking things like glutathione to really see the effect in your body.

**Okay. People are asking, this happen a lot. Does it help to transfer foods to glass that came in plastics?**

Yeah. Does it help to transfer foods that came in plastics into glass? Yes, it's just like the water scenario that's in a plastic bottle. Once you transfer it to glass, you won't get any more BPA released into the food product. If it's in glass, then whatever was there before is now in the glass, so we're going to store it, it would make sense. If you just eat it right away, obviously it wouldn't make any sense to do that.

But the food is already leached into the plastic.

Yeah, the food is already leached into the plastic if you get it in the storage from a plastic. Also for example, like we look at deli meats, whenever if I eat... let's say, sometimes you'll travel. I'll have to use deli meats to kind of on a plane, because I don't eat gluten or dairy, and I'll get some salami and it'll be in slices. I always take the top and bottom layer off and throw it away, because I don't want the BPA that's been touched against that for a long time into my food product, then I'll eat the rest of meats.

**Okay. You mentioned briefly about obesogenic effects of BPA. Can you please elaborate a little more?**

Yes, there's a field of research looking at chemicals and how they slow down metabolism. They're called the obesogens. Obesogens are basically chemicals that for the most part, endocrine disrupting chemicals. Plastics are starting to be categorized as an obesogen. Which means, for certain people and it's not for everyone, but there's this very people that are very susceptible to it. You may notice, if you have sluggish metabolism and you make an effort to reduce your plastic load, then you do see some changes in metabolism. You wouldn't expect to go reduce your BPA load and all of a sudden you lose 10 pounds, but you may notice some things may be easier, and if that is happening to a theoretical model is that those constant BPA exposures, those chemicals that bind to endocrine, to your thyroid or to even estrogen receptors are playing a factor in slowing down how efficiently your body can burn body fat. That's where the obesogens model comes in with environmental chemicals.

Okay. There's a company, it's called Sous Vide, it's just a cooking company. They put their foods in plastic, and then they come to you and then you cook them.

Oh, in the plastic?

In the plastic, [inaudible 00:44:42].



Bad idea.

**And they're saying, the cooked meats in plastic bags, they're cooked in lower heat water, is that still bad?**

Well it's heated. The more heat you have, the greater release you have. But lower heat still going to cause a release. If you're getting food delivered to your house in plastics, and then they're asking you to cook them in plastics, talk about increasing BPA load. If that's how you're eating regularly, you're definitely increasing your BPA load. Because it's just the opposite of everything we want to do, and if you have an inflammatory autoimmune disease, or infertility or some kind of endocrine dysfunction imbalance, that's not a good idea.

**Okay. What about children's plastic toys?**

Children's plastic toy to have BPA, and there's a strong effort for people trying to remove it, and they're now switching to BPS, which is what some people are concerned about. Yeah, if they stick it in their mouth, they're going to get exposure. But again remember, we have some resiliency to clear these things out, so BPA isn't classified as a poison, let me explain. What is classified as a poison, is something that kills us. Things that kill us, are things that our body cannot clear out through biotransformation pathways, and they disrupt our cell's mitochondria, and cause death and toxic effects. Now, rat poison as an example, is a vitamin D because rats can't process vitamin D. When they eat it, it has a toxic effect, then they die. BPA is not necessarily a toxic substance, we're not going to get death from exposure. But BPA is an endocrine disrupting chemical, so it's not a poison.

It's an endocrine disrupting chemical, and it's an inflammatory based chemical, so it's all about a curative effect. You do want to reduce it, but we do have some exposure to it and this is where metabolism and trying to clear it out becomes useful for us.

**Okay. Sorry, let me see. People are asking about just different water filters to use.**

Different water filters, again I don't know which ones are the best ones. The problem is, we don't have any oversight of people that are making these water filters in different... There's not an independent group that's trying to see if the filters are really doing what they think they do. Any information they give you is in-house studies, so we don't have really strict evaluations of how these water filters are actually working, that's the problem we have. It's hard to know, this is the one to use because you don't know if their claim is real, that's the issue.

Okay, let's see.

A far as between which is the best one I should say.

**Any home test for glutathione NAC levels?**



Any home test, well I don't know if you can do home tests for glutathione NAC levels. Yet you can do laboratory work where they look at the ratios of reduced oxiglutathione, there is a lab test, and they're quite expensive. I don't know if they tell you much more information than you need. Ultimately, you probably look at reducing inflammatory load anyways, and you're trying to just overall take a daily antioxidant. Taking glutathione NAC may be a pretty good idea, because levels of glutathione also are dynamic. They can change from day to day, they can change all the time. You could have your oxidized and reduced glutathione levels high or normal in one week, and then you get exposed to lots of environmental chemicals and stressors and have inflammation for whatever triggers may be, and have it just plummet within a very short period of time.

Since they're so dynamic and changing all the time, and they're not cheap, I don't personally think they're that useful in a real clinical setting because the cost benefit and the great amount of fluctuations, you see here.

**Okay, people are saying silicone, like silicone containers and fashion stuff are BPA free. Are those safe to use?**

No. If it's plastic, and it's flexible and they lose, there is phthalates in there, and there's BPS and other types of compounds that are endocrine disrupting. If it feels like plastic, looks like plastic, it's not good. That's just the bottom line.

**What do you use in your kitchen?**

What do I use, I showed you.

No, for like spatulas and stuff?

We try to use metal whenever we can, so I have like a metal spatula. We use wooden one.

[inaudible 00:49:33] plastic and silicon.

But we don't... Yeah, in our family we do have virtually no plastic utensils, or cooking gears or things like that. I showed you the glassware we use, the coffee we drink out of, Yeti metal containers we use. That's what we use in our household. And my wife has been great at really reducing the plastic load in our house. But there's some effort and now it's just normal to us. Now we're just used to doing that, and I think of my daughter, she's about to go to high school. I just look at her development and look at those simple changes that my wife made over all these years, that's made these dramatic impact on her chronic exposure, to BPA and plastic compounds that are not only endocrine receptors, but they are pro-inflammatory. I see this as just a very simple change that you just put some effort into, that can really make some long standing benefits of reducing an inflammatory compound.

Well, thank you. But you and Dr. [inaudible 00:50:34] freaked me out, so...



Yeah.

Our spatula, I think it's called a fish spatula and it's got like... You get it sort of the top, and it's really flexible, but it's metal.

Okay, so is a fish spatula?

I think that's what it's called, I don't know [inaudible 00:50:49].

It's like a metal flexible spatula, which makes it easy to use, but it's not plastic.

Some are [inaudible 00:50:55]. Yeah, and then we use wooden as well.

We use Wooden, yeah.

**Just thought so, yeah. If you were able to limit the load, how long would it take to detoxify the body to very low levels, days, weeks years? Sorry, you're not [inaudible 00:51:12].**

Sure, thank you. I'll use this last question, but the key thing with BPA is that if you immediately stopped drinking out of plastic water bottles, your BPA levels would drop within one or two days, so you can have a significant change in your urinary BPA levels, with just removing sources pretty quickly. Let's us also know how dynamic our BPA levels are, we get exposure, our levels go up and then you get these types of changes. I hope that information helped, and again, just to kind of summarize some of the key points that I really want to share with you. The key things are our body has resiliency and the ability to get rid of toxic chemicals. We get exposed to toxic chemicals and various chemical metabolites all the time. A highly healthy person with healthy amounts of biotransformation is going to get exposed to things like BPA and fire retardants and really have no problems because of how well our bodies are in metabolizing these things.

However, there are some subgroups that have less resiliency in their biotransformation pathways or have a chronic inflammatory condition, or have some endocrine metabolism disorders, where BPA can be a bigger issue for them. For people that have autoimmune disease, or chronic systemic inflammation or for people that have children with childhood developmental disorders, then trying to reduce this one key factor in your lifestyle by not totally avoiding, but reducing your load can be tremendously beneficial. I know in my own practice, I worked with autoimmune disease patients for example, I get to use an example. [inaudible 00:53:08] patient that comes in, they are on the autoimmune paleo, they've cut down every single food and they're still using high amounts of plastic products. Then you get the lab test back, and they're reacting to BPA, BPA levels are really high and that is an ongoing trigger.

If you can make some efforts to clear these things out of your system that could be helpful. Please check out Dr. K News, we have some information articles about BPA. If



## **How BPA and BPA-free chemicals impact autoimmunity and other chronic health conditions (Facebook Live on July 16, 2020)**

you want to also reduce your reaction to chemicals, you can look at improving your immune tolerance. We have some articles and online program about immune tolerance that's there for you, if you have interest in that. I hope this information is useful for you, and maybe a reminder to spend a little bit of effort to find out how to make your house less BPA dominant and go from there. Thank you everyone for joining me today, thank you.