



Transcript: #371 How Arsenic Is Causing Cancer and Diabetes with Dr. Joe Pizzorno

- Wendy Myers:** Hello, everyone. I'm Wendy Myers of myersdetox.com. Thanks so much for joining us today for *The Myers Detox Podcast*. Today, we have Dr. Joe Pizzorno on the show. He's one of the top voices about toxins and detoxification. He lectures around the world, educating doctors on how to detox their patients. He really does amazing work, amazing research and writes textbooks. I'm so honored to have him today on the show. We're going to be talking about arsenic today. We'll talk about how arsenic is causing cancer and diabetes.
- Wendy Myers:** We're going to learn about the number one cause of diabetes and obesity. We'll talk about how arsenic poisons the pancreas to promote diabetes. We'll talk about where you get arsenic, how it hurts your health and the steps that you need to take before embarking on a weight loss or detox program. We'll discuss how poor diet and lifestyle promote the production of toxic estrogens that lead to cancer.
- Wendy Myers:** We'll also discuss persistent toxins like PCBs and how obesity is directly correlated to the amount of PCBs that people have in their body. We'll talk about the unleashing of PCBs in the environment. Really, there's a direct correlation between bisphenol A as well. The more plastics and bisphenol A you're exposed to, the higher the obesogen level. It's a really, really interesting conversation today.
- Wendy Myers:** I know you guys who are listening are really concerned about your health, your weight and about toxins and how toxins are affecting you. I created a quiz called heavymetalsquiz.com. You can go there and take it. It only takes a couple of minutes and you can find out your relative body burden of toxins. And after you take the quiz, you get a totally free video series that answers your most frequently asked questions. Questions like how long does it take to detox? What are the best supplements to take? What kind of testing should I do to find out

the toxins I have? Just go to heavymetalsquiz.com. It's totally free. You can take the quiz there.

Wendy Myers: Our guest today, Dr. Joe Pizzorno, is a leading world authority on science-based natural medicine, a term that he coined in 1978. He is a licensed naturopathic physician, educator, researcher, clinician and lecturer. He is the founding president of Bastyr University, editor-in-chief of *Integrative Medicine: A Clinician's Journal*, chair of the board of the Institute for Functional Medicine and co-founder of the American Association of Naturopathic Physicians. He is also a founding board member of the American Herbal Pharmacopeia and on the science boards of Hecht Foundation, Gateway for Cancer Research and Bio-clinical Naturals.

Wendy Myers: He was appointed by Presidents Clinton and Bush to two prestigious commissions advising the US government on how to integrate natural medicine into the healthcare system. He is a recipient of numerous awards and honors. He is the author and co-author of 13 books, including the best-selling *Encyclopedia of Natural Medicine*, which is amazing and the principal textbook in the field, *The Textbook of Natural Medicine*. His newest book, *The Toxin Solution*, was released in February 2017 by HarperCollins. You can learn more about Dr. Pizzorno and his work at drpizzorno.com. Dr. Pizzorno, thank you so much for joining the show.

Dr. Joe Pizzorno: Thank you for the invitation. Glad to be here.

Wendy Myers: Why don't you tell us a little bit about your background and how you got so interested in detoxification?

Dr. Joe Pizzorno: I've been involved in medicine now for literally, over a half century. I worked in medical research way back in the 1970s, and then learned about naturopathic medicine. I decided to become a naturopathic doctor. As a naturopath, of course, I've always been interested in the area of nutrition and toxins. I've had a lot of patients and I've seen environmental toxins causing harm, up until now.

Dr. Joe Pizzorno: About 10 years ago, I was invited by one of the wealthiest men in Canada to develop a wellness program for his employees. They were oil field workers. I thought, "Okay, well, oil field workers, that kind of work," in my head, as well as, "Well, they're working in oil refineries, things like that." So, I developed some tests for that.

Dr. Joe Pizzorno: Well, when I got there, I discovered that they were not working in refineries. These were people who were going out into the prairies in Alberta and checking the pumps to make sure the pumps were pumping the oil properly. So, they actually weren't getting the exposure that I was expecting. Nonetheless, I had already decided what I wanted to test. So I tested them and I found that they were full of toxins. I was surprised because the amount of toxins that I was finding was higher than I expected, from the research literature.

Dr. Joe Pizzorno: I started looking into the research on environmental toxins and started realizing that a lot of these toxins were causing a lot of disease. As a matter of fact, I started to see the research saying that the epidemic of chronic disease we're seeing in every age group looks like it's primarily due to environmental toxins. I started looking at which were the worst toxins? The first one that came out was arsenic.

Dr. Joe Pizzorno: It was a big surprise because you don't hear people talking about arsenic as a problem. As I started looking at the research, I found one study that showed that one-third of the major cancers, like lung cancer and things like that, were due to arsenic. What's going on?

Wendy Myers: I was very arsenic toxic, for sure.

Dr. Joe Pizzorno: Oh, and did you figure out where it was coming from?

Wendy Myers: I assumed it was because I used to eat a lot of non-organic chicken and non-organic eggs. I used to eat at El Pollo Loco a lot, and was thinking that that was health food, for many years. I think I got a lot of my arsenic there.

Dr. Joe Pizzorno: It's very possible. The three main sources are water, chicken and rice. In general, when we look at the epidemiological research around the world, what has the strongest correlation is water. Drinking water is contaminated with arsenic. It turns out that it is really common. Here in the US, 10% of the public water supplies that have reported their results, have arsenic levels known to induce disease in humans. Only half the public water supplies have reported their arsenic levels, which is a little strange. It's not a very expensive test.

Wendy Myers: That's very suspect because that's one of the most common water contaminants. Especially around the world. I know in Bangladesh and in India, as well, they have a horrible, horrible problem with arsenic toxicity in the water.

Dr. Joe Pizzorno: Yes.

Wendy Myers: Yeah.

Dr. Joe Pizzorno: Yes.

Wendy Myers: How big of a health problem is arsenic? Can you tell us some of the symptoms of arsenic toxicity?

Dr. Joe Pizzorno: That's the problem. You don't tend to get a lot of symptoms at chronic low-level exposure. When you're exposed to high levels, it's urgent and you end with severe bruising. It gets figured out really easily.

Dr. Joe Pizzorno: The problem is when people are consuming it on a regular basis, at a relatively low level, it causes cumulative damage to the DNA. Not only does it cause

cumulative damage to the DNA, which then makes you more susceptible to cancer, but it also damages the pancreas. The pancreas is responsible for producing insulin, and when the pancreas can't produce insulin, you get diabetes. When you then start looking at which diseases are most strongly correlated with arsenic levels, most are your cancers, diabetes and stroke. It's a big problem.

Wendy Myers: Doesn't it also poison enzymes that transfer triglycerides out of fat cells? I know one of the symptoms of arsenic toxicity is weight gain. People become overweight or have resistant weight loss as well.

Dr. Joe Pizzorno: Yes, there are many examples where arsenic causes problems of that nature. Now, when you're looking at weight gain, I think bisphenol A is actually worse. If you look at a graph of the amount of bisphenol A in a person's body and the amount of obesity, there's a direct correlation.

Wendy Myers: Interesting.

Dr. Joe Pizzorno: I think arsenic probably contributes as much to the metabolic syndrome side of it as anything else, but the bisphenol A is actually even stronger.

Wendy Myers: I read that Napoleon Bonaparte died of arsenic toxicity.

Dr. Joe Pizzorno: Quite possibly.

Wendy Myers: That was discovered in a HTMA, years after his death. Can we go over some of the diseases that are caused by arsenic?

Dr. Joe Pizzorno: Sure. There was a study done in Italy which I thought was really good because it was a prospectus study. With a prospectus study you don't know what the outcomes are going to be. You're going to take a group of people and follow them for a period of time. So, this was a prospectus study, 20 years long, 20,000 people. They measured their arsenic levels and then they looked at what kinds of diseases they developed. What they found was that stroke and cancer were by far the biggest factors. Then to a lesser degree, diabetes and then a number of other cancers.

Wendy Myers: Diabetes is such a huge problem in our society. I love what you said in your book, *The Toxin Solution*, that the number one primary driver of diseases today are toxins.

Dr. Joe Pizzorno: Yes.

Wendy Myers: Can you expand on that thought a little bit more?

Dr. Joe Pizzorno: The disease that grabbed my attention first was diabetes. It grabbed my attention because when I was in naturopathic medical school, half a century

ago, diabetes affected less than 1% of the population. As a matter of fact, when I was in private practice, I didn't see my first diabetic patient until I'd been in practice for a year. You might say, "Well, a new practitioner doesn't see a lot of patients." I was seeing as many patients as I could and it was one year before I saw my first patient.

Dr. Joe Pizzorno: Now, about 10% of the population has diabetes and one third of the population is projected to get diabetes. I said "Whoa, why is that? Our genetics didn't change." You might say, "Well, it's sugar." Sugar's not good for us, but there's no correlation between sugar consumption and the diabetes epidemic. The increase in sugar happened way before the epidemic started.

Dr. Joe Pizzorno: I kept looking and looking, and I started seeing organochlorine pesticides, bisphenol A and arsenic. I started looking at different toxins. The nearest I can tell, about 90% of the diabetes epidemic is due to environmental toxins.

Dr. Joe Pizzorno: You might say, "Wait a minute. Obese people have way more diabetes. It must be obesity." It's true, obese people have way more diabetes, but obese people in the bottom 10% of bio-load of environmental toxins don't have increased diabetes. I'll be clear. I'm not saying being morbidly obese is okay. It's not okay, but as an explanation for diabetes, that's not it. It's the toxins. It's not having the fat, but what's in the fat that causes the trouble.

Wendy Myers: I also firmly believe that people who are overweight or have resistant weight loss, their body is not letting go of the fat because it needs this fat as a storage receptacle. It has to have somewhere to put this garbage to keep it away from vital organs. What are your thoughts on that?

Dr. Joe Pizzorno: It's an interesting hypothesis. When I was doing the study in Canada and seeing all those toxins and seeing the correlation with weight, the person who sponsored it said, "Well, what if people get fat just to dilute the toxins so it doesn't cause as much damage?" I thought at the time that it didn't make a lot of sense. Now, I think it's actually probably a pretty smart insight.

Dr. Joe Pizzorno: What happens is, many of the worst of the toxins are fat-soluble. Not only are they fat-soluble, but they're really hard to detoxify. The worst of them are the PCBs and the polychlorinated biphenyls. Even though they were banned over 40 years ago, they are what are called persistent organic pollutants, which means they're hard to break down. Once they get into our bodies, they accumulate in the body.

Dr. Joe Pizzorno: As you look at the bio-levels as people age, the levels of PCBs and levels of DDT, which was also banned 40 years ago, keep going up and getting worse because the body can't get rid of them. The half-life of PCBs is two to 20 years. Some of your PCBs, if they get in your body when you're 10 years old, it takes four half-lives to get rid of them. So, if it's a 20-year half-life, you won't get rid of

them until you're 90. It's hugely problematic. These things build up in your body and they cause cumulative additional damage.

Wendy Myers: Is there any way that you know of to get rid of PCBs?

Dr. Joe Pizzorno: Yes, it turns out fiber and bile sequestrants are the best agents. What happens is, the body does secrete some of this into the gut every day. Not very much, but some of it. Because our diet is so low in fiber, it gets reabsorbed through something called enterohepatic circulation. As we evolved as a species, we were consuming 100 to 150 grams of fiber a day in the diet. As we evolved our systems, the liver would dump stuff into the gut, bind to the fiber and go out through the stools. Well, if there's no fiber, it gets reabsorbed.

Dr. Joe Pizzorno: The good news is, we can just bind it with fiber. The more aggressive approach is that you take a drug which is what are called bile sequestrants. So, these are things like cholestyramine and things of this nature. They were developed to reduce cholesterol. While they do reduce cholesterol, at the dosages they had to use there are unpleasant side effects like smelly, oily diarrhea and things like that. People don't like using them. It turns out, not only do they bind to your cholesterol, but they also bind to many of these really bad fat-soluble toxins, so it's actually pretty effective.

Wendy Myers: Is that something that you recommend in your patient population?

Dr. Joe Pizzorno: If their levels are high enough, I do.

Wendy Myers: Okay.

Dr. Joe Pizzorno: If you're symptomatic and the levels are high enough, I strongly recommend it.

Wendy Myers: Fantastic. So, let's go back to arsenic. What percent of the population, do you think, are arsenic toxic?

Dr. Joe Pizzorno: Going back to the Italian study I mentioned, and looking at the level they found at which people above that level started having all this disease, 35% of people in the United States are above this threshold found to cause disease, in Italy. One out of three people is suffering disease right now because of arsenic. It's not rare. It's real, everyday.

Wendy Myers: I've tested thousands of people and a good fraction of those have arsenic toxicity. It's just so incredibly common. What is the best way to test for arsenic levels? If someone hears this, or they are curious and they want to do some testing?

Dr. Joe Pizzorno: The vast majority of research is on urinary arsenic. It turns out that urinary arsenic is a pretty good measure of what's going on in the body. What makes arsenic so interesting compared to other toxins, I'm sure you've seen this as

well, is that arsenic has a short half-life. The half-life of arsenic is only two to four days. If you stop exposure, it'll all go away. Now, it'll take time to repair all of the damage, but you can get your arsenic levels down pretty quickly.

Dr. Joe Pizzorno: The challenge is that people are constantly being exposed to arsenic. If you eat chicken regularly, if you eat rice regularly, if they're in one of the areas where the water supply is contaminated with arsenic, they just keep putting arsenic back into their body. If you want to determine a person's arsenic levels, if they're in their normal environment, urinary works just fine.

Dr. Joe Pizzorno: But what if you have somebody who's working on a farm? I live in Seattle, so let's say somebody's working on a farm in Eastern Washington and there's a lot of arsenic in the water supply on that farm. They come to Seattle. They hear about this naturopathic doctor who knows a lot about environmental medicine and wants to come to see me. While they're here they go to Costco or the local grocery store or a movie. They don't see me until they've been here for three days. There's no point in measuring their urine levels because it's already washed out.

Dr. Joe Pizzorno: If you're not seeing a person in their normal environment, you can use toenail arsenic. While it's not great, toenail arsenic does correlate with things like diabetes, cancer and things of this nature.

Wendy Myers: Okay, great. Earlier you mentioned that we get arsenic from water, chicken, rice, et cetera. I think people need to be aware that even if they're drinking filtered water or bottled water, they can still get arsenic from shower water if their municipal water source is not removing it. Can you tell us any other sources of arsenic people should be aware of?

Dr. Joe Pizzorno: There are many areas of the country where you've got industrial contamination of the environment from arsenic. I had an example of that in Portland where there's small companies that produce colored glass. It turns out they were releasing arsenic and cadmium into the environment from producing colored glass. There's plenty of areas where we have industrial contamination where you wouldn't expect it because you're not living in an obviously industrialized area, but it's being leaked into the environment.

Dr. Joe Pizzorno: Another really serious one for children is old climbing toys. The old, wooden climbing toys were preserved with arsenical compounds. What happens when kids play on them and crawl on the wood and things like that, they pick up the arsenic.

Dr. Joe Pizzorno: Another area is wooden boats. A lot of the compounds they used to paint the wood on the wood boats so that barnacles and such won't eat them, they have arsenic in them. They have cadmium in them. They have all kinds of toxins. People working in the boat industry and/or people who spend a lot of time

touching wooden boats and things like that, they have a chance of picking up arsenic. There are a bunch of ways to pick up arsenic.

Wendy Myers: It's in a lot of our foods. It can be in water that's used to irrigate foods and crops, so it can get into vegetables. These toxins are in our air, food and water in a lot of places. What is the best way to get arsenic out of the body? There's a lot of different substances that detox arsenic thankfully. What are your favorites?

Dr. Joe Pizzorno: Now, that's the key question. With all the toxins, number one of course, is avoid it. Number two, get them out of your body as fast as you can. Sometimes you've got situations where it's very difficult to avoid them.

Dr. Joe Pizzorno: Arsenic is interesting in that it goes through a two-step detoxification process. What happens is the body binds methyl groups to the arsenic but does it through a two-step process. The first methylation produces something called MMA, which is monomethylarsonous acid. We say MMA for short. It's actually eight times as toxic as regular elemental arsenic. The body then quickly does a second methylation to produce DMA, dimethylarsonous acid and that is 400 times less toxic than elemental arsenic. You've got to go through both phases.

Dr. Joe Pizzorno: It turns out there are several factors that impair people's ability to get rid of arsenic. Number one is if they're having trouble with methylation. So people with high homocysteine levels, and I assume most of your audience know about homocysteine? Homocysteine is an interesting molecule in the body. When homocysteine levels get too high, you get more heart disease, dementia and it's really a toxic molecule. It damages DNA and things of this nature.

Dr. Joe Pizzorno: We need some homocysteine in our body because it's the storage form for cysteine. We use that cysteine to produce nucleophiles, which is so protective for us. It also has methyl groups around it. Normal amounts of homocysteine are levels of like six to seven, maybe five to seven is about the right range. Anything above 10 is clearly very toxic.

Dr. Joe Pizzorno: It turns out, the reason homocysteine levels may be elevated is because of a loss of methyl groups. Those methyl groups are needed not just to detoxify homocysteine, they're required to detoxify arsenic as well. If somebody has high homocysteine levels, they're going to have more trouble getting rid of arsenic.

Dr. Joe Pizzorno: There's a second problem too for some people. It's not common, it's only one out of 100 people. They'll do the first methylation stage very efficiently and produce eight times more toxic MMA. They get stuck there. They don't do the second methylation stage very well at all. They end up getting more toxins from the arsenic.

Dr. Joe Pizzorno: When we're looking at arsenic detoxification, it's not just avoiding the arsenic. It's also making sure the methylation's working as well as possible. If a person's homocysteine levels are up, you have to figure out why that's happening and get

the homocysteine down so that they can have the methyl groups they need to get rid of their arsenic.

- Wendy Myers:** Yes, what supplements do you like? What binders or mobilizers do you like to use to detox arsenic?
- Dr. Joe Pizzorno:** Oh, this is pretty interesting. I just finished a brand new lecture, literally just this past week, titled “Unimportant Molecules”. Why would I write a lecture about something that's unimportant?
- Dr. Joe Pizzorno:** The reason I wrote the lecture is because when we look at food, we have decided that only 50 elements of molecules in food are important. You know, the vitamins and minerals, amino acids and things like that. That's an antiquated view. I'm not saying the word, right? It's an outdated concept because a lot of the research on nutrition in terms of what we need was determined when we had more limited tools for studying human physiology.
- Dr. Joe Pizzorno:** We decided that less than 50 molecules were important. Then as we grew foods with chemicals rather than organically, as we hybridized our foods, as we refined our foods, since not a lot of these vitamins and minerals were being lost, we thought it was okay. It turns out that other molecules in the food were lost. I have a reason for this story. I'll get to it.
- Dr. Joe Pizzorno:** It turns out that there are about 50,000 molecules in food. We decided that 99.9% of what's in food is not important. I'm calling it the “Unimportant Molecules”.
- Dr. Joe Pizzorno:** When we started looking at current research, we found these molecules are really important, which brings us back to arsenic. Remember, methylation is critical for arsenic detoxification. Methylation requires folic acid. More accurately, it requires folates. If you look at our diet, we have natural folates in our diet that are methylated and already ready to go to do all the methylation work that we need. Because our diet has changed so much, we've lost the natural folates from our diet. We decide to supplement that with folic acid. Because we have lower levels of folates, you get neural tube defects, you get elevated homocysteine and all kinds of bad things that happen.
- Dr. Joe Pizzorno:** We decided to fortify the food supply with folic acid. Folic acid does not exist in the diet. It's only as a supplement. For folic acid to work, it has to go through several enzyme steps, one of which is called MTHFR. People have probably heard about the MTHFR resulting in elevated homocysteine. The MTHFRs only count if the diet is deficient in normal methylator folates and you're dependent upon folic acid.
- Dr. Joe Pizzorno:** Going way back to arsenic, you need these methylator folates for a body to be able to get rid of arsenic most efficiently. The best sources of folates are good old green, leafy vegetables. If people have arsenic problems, it's a really

important thing to do to eat green, leafy vegetables. Eat fermented foods, too. Fermented foods are also high in these activated folates so they're ready to do the job, rather than something like folic acid that has to go through all these metabolic processes. For half the population, they can't convert folic acid into folates very well at all.

Wendy Myers: Oh, interesting, interesting. Those green vegetables have lots of fiber in them as well, so you get a one-two punch for detox.

Dr. Joe Pizzorno: Yes, I also include a fiber that helps protect you from arsenic and damage from the arsenic, et cetera.

Wendy Myers: Are there any supplements though, that you recommend people take just for this? I have a lot of people coming to me. They're eating lots of green vegetables and they still have very high metal levels of different sorts. For arsenic specifically, are there any nutrients that you found that are particularly helpful to kind of accelerate that detox process?

Dr. Joe Pizzorno: I come back to eating foods rich in folates. It's quite interesting. If you look at the research on using supplemental folic acid for treating people with high arsenic levels, the research isn't consistent. I think the reason the research is inconsistent is because it's dependent upon the test population. You may have one test population that has the high levels of the snips where they can't convert folic acid to another form. Another population I'm studying where actually, they make the conversion okay. So it works with one group of people but it doesn't work for another group of people. For that other group of people that can't metabolize folic acid into reactive methyl folates, they actually get a toxic reaction from the folic acid, increased risk of cancer and things of this nature.

Dr. Joe Pizzorno: Going back to supplements, if you are going to use a supplement, it should not be folic acid. It should be activated folate. In terms of which supplement I would recommend the most, it's activated folates.

Dr. Joe Pizzorno: When I'm thinking about people with high levels of toxins, I have kind of a three-step process for how to deal with it. Number one, always avoid it. Just avoid letting stuff in your body that you have to get rid of. Number two is what are the normal mechanisms by which the body uses to get rid of the toxin? Can we support those normal mechanisms? Many times, it's not just supporting the normal mechanisms, but avoiding sabotaging those normal mechanisms. Then, if that's not enough, I go into toxin-specific intervention.

Dr. Joe Pizzorno: With arsenic, at this point stages one and two are plenty. You don't need to do more than that unless it's acute poisoning, at which point the person needs to be at an emergency room anyway. For the average person, avoidance and facilitating proper folate function is, in my opinion, probably all that they need to do.

Wendy Myers: Can you tell us about any other obesogens that we should be concerned about?

Dr. Joe Pizzorno: Oh, sure. When the researchers were looking at these various chemicals and they were finding such strong correlations between the bio level of these metals and chemicals and diabetes and obesity, they started calling them obesogens and diabetogens. It's the real reason.

Dr. Joe Pizzorno: These things can cause excess weight gain through a wide range of mechanisms. For example, people know that if your thyroid is too low, you tend to gain too much weight because you metabolically aren't active enough to use up the calories. Anything that damages the thyroid will result in lower thyroid function and increased risk for developing excess weight.

Dr. Joe Pizzorno: What damages the thyroid? First off, of course, is a deficiency in iodine. You might say, "Well, that's not a problem, is it?" It is a problem. Throughout history, we've had a lot of trouble with iodine deficiency. We used to have something called myxedema. I've seen children born with no IQ because the mother's thyroid levels were so low. We put iodine into the food supply to address this. It worked pretty effectively, mainly by iodizing salt.

Dr. Joe Pizzorno: About 30 years ago, we made a fundamental change in our food supply and that has resulted in the average person's iodine level decreasing by 50%. Why is that? First off, most of the iodine was coming from iodized salt. When people stopped cooking food at home and instead went out to buy food in restaurants, restaurants tend to use salt that does not have iodine in it.

Dr. Joe Pizzorno: Number two, the second major source of iodine was actually coming from milk because iodine was being used to wash the udders of the cows to sterilize them before the milk came out. They now use antibiotics instead so the milk now doesn't have as much iodine.

Dr. Joe Pizzorno: The third factor is iodine-based compounds were used to help bread rise when bread was being made. They're now using brominated compounds instead, which compete with iodine. All together, you have low iodine levels.

Dr. Joe Pizzorno: Now, you add to it environmental contamination. For example, cadmium poisons the enzyme, the system that's responsible for making thyroid hormones and for converting thyroid hormones made by the thyroid into the more active version actually used by the cells. Many environmental toxins do the same thing.

Dr. Joe Pizzorno: The thyroid primarily produces T4. That's kind of an amino acid with four iodines on it. When it gets into the cells, the cells, through enzymes called deiodinases, take off one of those iodines and make it three times more active. What it does is it promotes the mitochondria to become more active and produce more ATP. ATP is the energy the body uses for function.

Dr. Joe Pizzorno: Maybe these environmental toxins that we're being exposed to, poison the enzymes to convert thyroid into the more active form. A great example is PCBs. The PCBs are directly poisonous. It's a huge problem for dolphins. If you actually look at the T4 and T3 levels of dolphins, they've decreased about 25% in the last 50 years. 90% of dolphins no longer have as much energy as before and they're more susceptible to shark attacks, for example. It's not just us who are being damaged by this. The whole ecosystem is being damaged as well.

Wendy Myers: Mercury plays a huge role also, in poisoning the thyroid and T4 to T3 conversion. I don't think it's statistically possible to not have some level of mercury in your body.

Dr. Joe Pizzorno: It's hard to avoid, for sure.

Wendy Myers: Are there any other metabolic poisons that we should know about? The point I'm trying to drive home here is that if you are overweight or have children, a husband or family member that's overweight or you yourself, it's not your fault. I think a lot of people that are overweight are eating a normal caloric diet. They may or may not be exercising. There's a lot of people out there who are trying to lose weight and not being able to do that successfully because toxins are poisoning the body's metabolic function and one's ability to lose weight and maintain a healthy weight.

Dr. Joe Pizzorno: There's two problems. If a person does have extra fat, that fat is full of fat cells and toxins. When you start losing fat, those toxins start to get released and poison the metabolism so you feel terrible. This makes it harder to lose weight because if you're losing weight and you're feeling terrible, why keep doing it?

Dr. Joe Pizzorno: As a healthcare professional, of course I've helped a lot of people lose weight. Helping people lose weight is not that hard. The hard part is keeping it off. The only way to keep off weight is number one, build muscle mass. Most people may now say, "Wait, muscle mass?" Yes, muscle mass.

Dr. Joe Pizzorno: If you look at muscle at rest, a pound of muscle burns about 50 calories. If you look at fat cells at rest, they only use about five calories. Fat storage is very efficient.

Dr. Joe Pizzorno: One of the things I do with the people that want to lose weight, and this works really well for women because so often women don't have as much muscle mass as men do, I help them build muscle mass. By building muscle mass, even if they're consuming the same number of calories, they have enough muscle mass to actually start losing weight. Muscle mass is number one.

Dr. Joe Pizzorno: Number two is stop eating wheat. I have found that not eating wheat is hugely effective at helping people maintain weight. There's a number of mechanisms. I don't want to get into a lot of it but wheat is number two.

Dr. Joe Pizzorno: Number three is to open up the organs of elimination so that they can get rid of all these obesogens from the body. It takes time and it's really critical. I talk about this a lot in my book, *The Toxin Solution*. When a person goes on a weight-loss program or a detox program, first open up your organs of elimination. Get them working properly before you start scaring up the toxins. If you get the body to release toxins more quickly than the body can get rid of them, you just redistribute the toxin, causing more trouble.

Dr. Joe Pizzorno: If somebody wants to lose weight, I say, "If you're trying to lose weight, let's get your detox systems working properly so that those toxins are coming out and you can get rid of them as efficiently as possible." I say the same thing to women too who want to get pregnant. We now know that there's an infertility epidemic going on as well, because many of these toxins directly poison fertility.

Dr. Joe Pizzorno: For example, there's a direct inverse correlation between the level of toxins in a man's body and amount of sperm that they produce. Sperm levels have dropped 50% in the last 100 years because of all these environmental toxins.

Wendy Myers: It's really a terrible problem in our society that so many couples are having trouble conceiving. We see this explosion of infertility clinics. Again, toxin detoxification is part of that problem. You have *The Toxin Solution*. You have this amazing book out that I highly, highly recommend. It's brilliant. You have so many scientific citations throughout the book. Your research is absolutely impeccable and admirable. Can you tell us a little bit more about your book and what someone can expect when they read it?

Dr. Joe Pizzorno: The book subtitle is *The Eight-Week Program to Detoxify Your Life*. What I do with people is I start off by saying, "Here's all the major diseases. Here's how they're related to toxins." For example, we talked about arsenic.

Dr. Joe Pizzorno: Another toxin that's really important is lead. People may say, "Well, why is lead a problem? We removed it from gasoline. We don't paint with it anymore." That's true but when do people start showing most of the disease? In their 50s and 60s. What happens during their 50s and 60s is men and women start losing bone. Where is lead stored? It's stored in the bone.

Dr. Joe Pizzorno: One of the reasons we see so much disease then is because all those toxins come out. Not just lead, mercury comes out as well. I show how most chronic disease is due to environmental toxins.

Dr. Joe Pizzorno: I say, "Before you go on a detox program, there's no point going on a detox program until you stop letting the toxins come into your body." I take people on a two-week program of how you systematically look at all the sources of toxins coming into your body. Then, how do you get rid of them? How do you stop those sources, stop putting the toxins in?

Dr. Joe Pizzorno: Stop putting the toxins in. Now let's clean up your gut. A big load of toxins for the body also comes from the gut, from having the wrong bacteria in the gut. They produce all these chemicals that are poisonous, which then go to the liver for detoxification. If the liver's having to spend all its time and its resources breaking down toxins from the gut, then it has less resources available to break down all the other toxins from the environment. Clean up the gut first. Take two weeks doing that.

Dr. Joe Pizzorno: The next step is to clean up the liver. Get the liver functioning properly. There's a lot of things we can do to help the liver to function properly, to break down toxins more efficiently, but also get them out more efficiently as well.

Dr. Joe Pizzorno: The third area of detox, the major one, is the kidneys. This is interesting because when I first started practicing naturopathic medicine 50 years ago, I didn't see kidney failure. That was another disease that was very uncommon and now is incredibly common. I just finished a new lecture on how you restore kidney function because the kidneys are hugely damaged by toxins. There's a number of strategies you can do to actually regenerate the kidneys and get the GFR, eGFR, back up where it's supposed to be. You clean up the kidneys.

Dr. Joe Pizzorno: Now we're ready. Now we got the gut cleaned up. The liver's working properly. The kidneys are working properly. Now, let's detoxify.

Dr. Joe Pizzorno: There are a number of ways of detoxifying. I find my most favorite is saunas. You get in a sauna where you sweat profusely for about 20 minutes. Make sure you replete water and trace minerals. In that sweat are many of these toxins that are so hard to get rid of. The sweat is full of cadmium, mercury and PCBs. This way, if you detox right, we should get it all the time. PCBs are hard to detox as I mentioned before. Their half-life's two to 20 years. They actually go out pretty effectively through the sweat. Then you start a program where you just sweat for at least 20 minutes, three times a week, and step by step you get better.

Dr. Joe Pizzorno: I tell people, "For the first two weeks when you shift exposure to toxins, you will already start feeling better because many of these toxins are what are called non-persistent." Non-persistent means that the body gets rid of them within a few days. Stop exposure like arsenic and bisphenol A and it goes away.

Dr. Joe Pizzorno: Some of the toxins are persistent toxins, like the PCBs and lead. They take a long time to get rid of. You get a short-term benefit but if you keep it going, you'll see you're progressively improving your health over time.

Wendy Myers: One thing I love about your work is that you educate the public and medical doctors as well, about this. The most frustrating thing is for someone to go to a doctor and the doctor's like, "Oh, you don't need to detox. That's just a bunch of woo-woo. Your body was designed to detox." I think there's a lot of resistance in the conventional medical field that this is a problem or underlying root cause.

It's something they also just are not really equipped to address. There's no drug to prescribe to detox, apart from DMSA.

Dr. Joe Pizzorno: Yes, it doesn't reflect the medical model very well. The first part of that statement was correct. Our bodies are actually very good at detoxifying. I'm not going to ultimately independently verify this, but one of the smartest people I know, Dr. Sid Baker, a medical doctor on the East Coast, said that 25% of the energy produced every day by the body is used for detoxification.

Dr. Joe Pizzorno: We think about detoxification for environmental toxins, but you also do detoxification all the time. For example, our hormones, if you're a woman you have a lot of estrogen. I'm a man. I have a lot of testosterone. We think about what it does to produce the female characteristics and the male characteristics, but once it's done you've got to get rid of it.

Dr. Joe Pizzorno: The liver detoxifies estrogen but it detoxifies estrogen through two pathways. One pathway produces estrogen which is actually carcinogenic. Estrogen metabolites are carcinogenic and increase the risk of things like breast cancer.

Dr. Joe Pizzorno: The other pathway, it turns out, is anti-carcinogenic. It actually prevents women from getting breast cancer. How do you determine which pathway you go? By what you eat and by what toxins you're exposed to.

Dr. Joe Pizzorno: For example, if you like to smoke, you live near a highway with diesel fumes or you like to barbecue your food. I'm not saying don't do those things but if you do those things, you promote detoxification of estrogen to the pathway that is pro-carcinogenic.

Dr. Joe Pizzorno: Conversely, if you're eating healthy foods, a grassy family of foods, a cabbage family of foods, those cabbage families of foods make the estrogen go through the anti-cancer pathway. There's so many examples. Everyday choices we make in the short-term which may not be obvious, but in the long-term they define whether we're healthy or not.

Wendy Myers: Yeah, that's why I love broccoli sprouts. Broccoli sprouts are amazing for detoxification.

Dr. Joe Pizzorno: They are.

Wendy Myers: Is there anything else that you want to share with us that we haven't mentioned so far, in regards to toxins and detoxification?

Dr. Joe Pizzorno: Yes. A foundational naturopathic medicine concept is that you must help your patients address the foundations of health. We can talk a lot about biochemistry, taking vitamins, drugs where appropriate and things of this nature. All of them have their place but if the foundation's not there, what could be accomplished is quite limited.

Dr. Joe Pizzorno: What are the foundations of health? Number one is eating real food. I'm defining real food as organically grown using heirloom seeds. We have so hybridized our food supply, a lot of these important molecules are gone. You have got to eat healthy food. Second is you have to have muscle mass. You have to exercise regularly. Third, is you've got to avoid environmental toxins. Fourth, you need to have well-groomed relationships. These are the foundational things. There's other things we can talk about, of course, but those are the foundational things. That's what people have to do. Then we start adding more sophistication.

Wendy Myers: I work with a lot of people as well, on detoxing. You have to have this kind of foundation built. You have to build the bomb shelter before you drop the bomb. You don't want to add fuel to the fire when someone's sick and then start detoxing them. It's the worst thing that you could do, even though we know they need to detox.

Wendy Myers: Well, Dr. Pizzorno, thank you so much for coming on the show. I highly encourage everyone to get a copy of Dr. Pizzorno's book, *The Toxin Solution*. It's a fantastic read. It's so educational. You're one of the top voices about detoxification in our industry. Thank you so much for your work.

Dr. Joe Pizzorno: Thank you for the work you do as well.

Wendy Myers: Everyone, thanks so much for tuning into *The Myers Detox Podcast*. Here I'll try to educate you about everything related to toxins, environmental chemicals and how to remove these toxins from your body so you can enjoy a long, healthy, disease-free life. Thank you for tuning in. I'm Wendy Myers of MyersDetox.com. I'll talk to you guys next week.

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