

The Great Simplification

Jane Muncke (00:00:00):

You can have the greatest rules in the world. If you're not enforcing them, they're worth nothing. And I think that is the biggest challenge in Europe right now with food packaging, with food contact materials. There are progressive rules to a certain extent, but they are not being enforced. So I don't feel that European citizens are better protected from these chemicals than people elsewhere in the world, to be honest.

Nate Hagens (00:00:29):

I'm pleased to welcome my friend Jane Muncke to the podcast. Jane is the chief scientific officer and managing director of the Food Packaging Forum in Zurich, Switzerland. Jane holds a doctorate degree in environmental toxicology and a master's in environmental science from the Swiss Federal Institute of Technology. If you recall from a month or so ago, Jeremy Grantham, on this show, said that he believes toxics, especially endocrine disrupting chemicals, are a larger threat to humanity's future than climate change. Quite a big statement. Jane and I unpack this as it pertains to food, how we heat our food, the chemicals in the plastics that are in the packaging in our food, fruits and vegetables that are sprayed, and how this story is still underground and is starting to percolate into more people's awareness. Please welcome Jane Muncke. Hi, Jane. Great to see you.

Jane Muncke (00:01:45):

Hi, Nate. Thanks for having me.

Nate Hagens (00:01:48):

How are you, my friend?

Jane Muncke (00:01:52):

I'm good. I'm good. It's busy times, but I'm excited to chat with you today.

Nate Hagens (00:01:54):

So let's start at the top. If you include Jeremy Grantham, whose episode will be out I think next week or the week after, you will be my 5th guest on the program to talk about plastics and their impact on humans and the natural world. That's a pretty large amount of coverage for this topic that a lot of people are unaware of. And you and I have a lot of colleagues and friends in common that are deeply, deeply concerned about not only climate change and biodiversity loss and those other things,

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but as plastic pollution as one of the key environmental risks. Could you maybe start with your opinion on that, a big picture?

Jane Muncke (00:02:47):

Well, the way people are talking about plastics is almost as if it's the plan B for the fossil carbon industry. And what I learned from you, Nate, I believe it was a Frankly on the Just Stop Oil, is that if we stop using fossil carbon as fuel and invest into expanding the use of plastics, it means that we will continue to pump fossil carbon from the ground. And the heavy fractions, which today are used as fuel, would be a waste product. So I'm feeling that this whole investment into plastics is just an excuse to keep pumping fossil carbon from the ground and to keep using the fuel.

Nate Hagens (00:03:38):

Well, it's a modern, much dirtier, technologically intensive version of Native Americans killing a buffalo and using all the parts of it. We are killing the barrels of oil, plus other things with their burning, just to use all of it. So it's like we're using all of the barrel of oil. But I think most people are less aware of the plastic pollution aspect, so maybe you could start by telling me what it is that you do professionally and how did you first have an aha moment that plastics were a real issue and dedicated your career to this?

Jane Muncke (00:04:19):

So I'll start with that, because that's maybe a fun story. So I was a PhD student working in an ecotoxicology lab, and my job was actually to set up a fish facility in our lab with zebrafish. This is around the 2000s and zebrafish were at that time already being used in developmental biology, but not yet in ecotoxicology, so my PhD was to look at using zebrafish for ecotoxicology. And I was the first PhD student, so I had the task of setting up this fish lab. And everywhere I looked people were saying, "Oh, zebrafish, fantastic model organism because they produce so many eggs and you can harvest eggs every day. They're a tropical fish so they don't live by seasons." And my fish were not laying eggs. And I got desperate because it just didn't align with what everyone was saying about this animal, the species.

(00:05:22):

So we tried all kinds of things, and one of the things that we looked into were the aquaria that we were housing the fish in. We'd gotten those from a colleague in

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neuroscience who was using polycarbonate plastic mouse cages that he had converted into aquaria for these fish. So I was thinking, "Wait a sec, there's plastic in contact with my water and that the fish are swimming in. There's something leeching maybe out of the plastic that is preventing their fertility." So I started this whole study into looking at the chemical used to make that plastic, which is bisphenol A. You may have heard of that. And yes, lo and behold, we found large levels of bisphenol A in the water that our fish were swimming in. Bisphenol A is an endocrine disruptor, interacts with the hormone system.

(00:06:14):

So my hypothesis was that this bisphenol A from the plastic aquaria was preventing fertility. I was about to publish my first paper on that when Fred vom Saal, a good friend and colleague, actually published the very same paper looking at bisphenol A in mouse cages. So that was that. And later on it turned out it actually wasn't the bisphenol A that prevented the fertility, it was something else. But that was my first contact with it.

Nate Hagens (00:06:44):

And from there, you are now doing what?

Jane Muncke (00:06:49):

So now I am the managing director of a foundation in Zurich, Switzerland called the Food Packaging Forum. And the Food Packaging Forum, or FPF as we lovingly call it, is a charitable organization that does science communication and scientific research, but desk-based scientific research, so I'm not in the lab anymore. I'm looking at the data and studies that others have published and together with my fantastic colleagues here on the team, we're a team of eight, we do systematic reviews. We've put together a whole bunch of resources that are all freely available to anyone. You can access them on our website. For example, we've got a database on chemicals in plastics. And more specifically, chemicals in plastic packaging. So that's the first publication we did back in 2019, I think, where we compiled this inventory of chemicals that are used or thought to be used to make plastic packaging.

Nate Hagens (00:07:53):

So assume that I know close to nothing about this topic, which is pretty close to the truth, what role does food packaging play in our modern lives?

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Jane Muncke (00:08:06):

So the way I look at food packaging is it's an enabler of globalized food systems. A lot of the food we consume today is not grown in the communities where we live. More and more people live in urban environments and we shop in supermarkets. We don't have time to cook, so oftentimes we buy heavily processed foods. A lot of it ultra-processed foods, as we call it. And the vector for getting these food stuffs onto our tables is food packaging. Sometimes food packaging even is so advanced, so highly engineered that you just leave it in the package, you leave the food in the packaging, stick it in the oven, heat it up, and then you eat it directly from the packaging. So it's really a wonderful aid, a wonderful product to help us live our modern lives.

Nate Hagens (00:09:10):

You and I talk quite a bit, and so I'm going to go on some tangents here. How much of that... I think it was Robert Lustig on a podcast that said that part of the reason that preservatives and processed and ultra-processed food evolved was to get food across the country to where the people were, from where it was grown. And I'm just wondering if, in the last 50 years as human population has exploded, that we traded--not in a planned way, but just in an emergent short-term focus way--if we traded human health for efficiency of getting the food to where it needs to be, and at the time the packaging, "Oh, we could create these packages from waste products of this oil that we're taking... Let's do that." Without thinking about the long-term and, like you said, the ecotoxicology aspects of it. Is there a history there, or what is your opinion?

Jane Muncke (00:10:23):

So I think it's really interesting to look at the history of food packaging. And before the mid 19th century, we have to go back quite a long way, the only way to preserve foods was either through fermentation, or drying, or smoking, or some people bury stuff in the ground and so on.

Nate Hagens (00:10:48):

My dog does that still.

Jane Muncke (00:10:51):

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Yes. And I think in Sweden, there's a type of fish that is very much sought after and that gets processed by burying it in the ground. But anyway, so we as being humanity had to work with the tools that nature offered us. And then mid 19th century there was a breakthrough, and it really was a disruption, a disruptive innovation. Namely, the invention of food packaging to preserve food stuffs, fresh food stuffs. And that gave humanity a certain kind of independence of the natural harvesting seasons. And I believe that this development also in a way enabled industrialization, because then less people had to produce food, more people could rely on other people.

Nate Hagens (00:11:45):

I never thought about it that way. So food packaging is almost a stabilizer of intermittence.

Jane Muncke (00:11:51):

Yeah. Yeah. Exactly.

Nate Hagens (00:11:52):

So in addition, we also need energy storage, which I had a podcast guest on that. But this is a subset of energy storage because food is energy. So if we store it and we can eat it a month from now, that changes our whole society's makeup, yeah?

Jane Muncke (00:12:11):

Yeah. A month or three years. So it helped with this huge issue of food security also. Because if you had a harvest that failed, then if you had stocks packaged appropriately, you could consume those and hope that next year's harvest would be better.

Nate Hagens (00:12:29):

But you said this discovery happened in the mid 19th century, that was before fossil fuels in a big way, wasn't it?

Jane Muncke (00:12:37):

Yeah. Well, I'm not too certain what happened when, but it was part of the whole industrialization. And it was Frenchman Nicolas Appert, who's quoted as being the person who invented modern food packaging. But of course at the time, the function of food packaging really was to conserve foodstuff, to store foodstuff, prevent food

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waste, prevent pests from getting in. And then gradually as human society changed with industrialization, food packaging got new functions. For example, think of the iconic Coke bottles. Those were used, the shape of that packaging was used for marketing. Or you got the function of preserving the crunchiness of biscuits and keeping the fizziness in your drink and so on. So really the way that packaging affects the quality and taste of your food.

(00:13:36):

And in today's food system where everything has to be, as you said, hyperefficient and it's all lean production and at scale, because that makes most sense economically. Food packaging has to work in highly centralized food processing facilities. So the big food companies in the world that produce 2, 3,000 different types of products, and they produce those in less than 20 maybe food processing centers for the global market. So it's all very efficient.

Nate Hagens (00:14:20):

Wait, there's 20 food processing centers in the whole world?

Jane Muncke (00:14:21):

No, no. Per brand. Per brand.

Nate Hagens (00:14:21):

Oh, per brand. Okay.

Jane Muncke (00:14:23):

I'm think of... I'm not sure if I'm allowed to say the name of this brand, but there's a very large Swiss food brand that has-

Nate Hagens (00:14:28):

Okay. We can guess, you don't have to say.

Jane Muncke (00:14:30):

It has less than 20 production centers globally for over 3000 different products. So you can imagine what the equipment, what the machines look like that put the food into the packaging. They're running 24/7, 7 days a week. They're shooting out products hundreds by the second, and those machines cost a lot of money. So you have to run

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them for, I don't know, 20 years maybe to amortize them. And that's the key point, they only work with a very, very, very specific type of food packaging. So that's really one of the big problems for these big food brands right now because their packaging waste is found in the environment. You've got a whole bunch of NGOs that are doing these audits and they report.

(00:15:23):

And I believe it's Coca-Cola, it's Nestle, and I'm not sure who's on number three, probably Pepsi or Unilever, one of those. Their products are, or the packaging waste of their products are most frequently found in the environment. So they've got a huge image problem, and it's oftentimes plastic. They'd like to move away from plastic, but they can't because they've got this technological lock-in because of how their business models work.

Nate Hagens (00:15:51):

So we're going to talk about food packaging specifically, but can you just refresh my mind and that of the viewers, what are the categories of environmental concern from plastic pollution?

Jane Muncke (00:16:11):

Well, plastic pollution is of increasing environmental concern because it is persistent. Plastic is a synthetic man-made material that cannot be metabolized by nature. So if plastic packaging becomes waste and then is not managed as waste, but is littered in the environment, then it just accumulates there. So since the 1970s, people like Charlie Moore and other scientists who've been going out to sea have been reporting on this, that plastics are accumulating in the oceans, in the gyres. But there's also a couple of examples, sad examples from remote islands like Midway Atoll, for example. There's these famous pictures of sea albatross that are found dead on the beaches there, and their stomachs are full of plastics because they mistake the plastic for food. And I think that's the point, that plastic is organic, chemically speaking. It's made from fossil carbon and fossil carbon is basically converted algae. So you always say, how do you say it, the sunlight...

Nate Hagens (00:17:27):

Ancient sunlight.

Jane Muncke (00:17:29):

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Ancient sunlight stored in plants sunk to the ground and then through various geological processes changed into oil. So the point is it's organic, and so these birds mistake it for food. And they're filling their stomachs with something that cannot be reabsorbed, that doesn't biodegrade, and then eventually they die.

Nate Hagens (00:17:54):

And if I recall my factoids correctly, plastic on the earth now outweighs all living animals, and at some point in the next 20 years, it will outweigh fish in the ocean, at current pace.

Jane Muncke (00:18:12):

Yeah. There's some estimates like that out there that I've also heard of. Yeah.

Nate Hagens (00:18:16):

So that's one thing, the birds and ocean creatures are consuming plastic and dying and getting sick. But just give me the real brief overview of some of the other categories of plastic concern. There's endocrine disruption, drops in sperm count, yes? What are the broader categories?

Jane Muncke (00:18:38):

Yeah. Well, plastics, as we said, are man-made synthetic materials. And the feedstock to make them is the waste product of fossil carbon refinery for fuel. This waste product gave rise to this whole chemical industry. Plastics are incredibly useful, I don't want to let there be any doubt about that. Including for preserving foodstuff. The problem with the material is that it's not inert. So that means that chemically, it can interact with the environment it comes in contact with or with the foodstuff in the case of food packaging, and we call that migration. So chemical migration basically describes the transfer of chemicals from the packaging into the foodstuff, and that happens for smaller molecules.

(00:19:38):

I don't know how much chemistry you want to go into, but basically when you make plastics you polymerize these molecules that we call monomers, so these are waste products of oil refinery. They're small molecules and with a very clever, complex, aggressive chemical reaction, a chain reaction, we make big polymer molecules. So that's up to 10,000 repeats of your monomer unit. It's one big molecule. And the

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polymer is what gives your plastic its moldability, because it's a big molecule, it moves slowly, it's waxy. And that gives you this formability, moldability, incredibly useful property of plastics. Now, when you make plastics, you have the monomers, you have a couple of catalysts, and those chemicals are not pharmaceutically pure grade, so you buy whatever you get on the market at a good price.

(00:20:38):

So maybe you've got 80, maybe 90% purity, and the other 10 or 20% is gunk. But that gunk will also be part of your chemical reaction, and that will also be present in your finished plastic. So you actually have a lot of different chemicals that make up plastic. And this is what fascinates me about this topic, and it has for the last 16 years that I've been working on this, even the people who manufacture plastics don't know the exact chemical composition of the finished material. So we're putting this material in contact with food. We know that its chemical constituents can transfer from packaging into food, but we don't know exactly what those chemicals are.

Nate Hagens (00:21:24):

A lot of these chemicals are invisible, and if they're toxic or produce cancer or reduce sperm count, or those sort of impacts, we don't know that for years or decades. So is this, at root, a natural thing that humans would do because the cost is way in the future and someone else's problem and the profits are today?

Jane Muncke (00:21:50):

I guess so. I'm not an expert on those things, but I do have a hunch that that plays a role. Yeah. If we've optimized our economy in such a way that we look at the next quarter earnings, then who would care about what happens in 30 years time? And I think speaking to the health impacts, it's very, very, very difficult to study the health impacts of plastics and chemicals in plastics. For one, because of these long time spans from exposure to effect. Of course, it's not the only chemical exposure that we have to deal with or our bodies have to deal with. But also, there's no control group. When you do these kinds of studies, like with smoking, for example. Back in the 1950s, it became clear that... It was this doctor study. The doctors who smoked had a higher risk for cardiovascular disease compared to the doctors who didn't smoke, so that became clear. But find a control group in today's world of people who are not exposed to plastic chemicals.

Nate Hagens (00:22:59):

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Right. It's not as easy to test as your fish in an aquarium because you might be exposed to chemical A because of your TV dinner, but then some people in the control group might be drinking from plastic bottles or whatever.

Jane Muncke (00:23:13):

Yeah.

Nate Hagens (00:23:14):

So let's get into this on migration. So if you had to imagine the universe of problems that we have from plastics, what percentage of them would you attribute to food packaging versus other packaging, plasticizers and other things?

Jane Muncke (00:23:37):

Yeah. So the data we have there, and this always surprises me as a natural scientist, the data we have there are from the market. They're self-reported, so that's very hard to have exact absolute numbers. So take this with a pinch of salt. But of the, I don't know, maybe it's 400 million tons of plastics that are being produced today, or roughly around that, about 10 to 20% are for food packaging. So 40% of the overall plastic production is for packaging, we say, and about half of that is for food packaging.

Nate Hagens (00:24:19):

And I know that, or it seems that in the entire world, Europe has taken the lead on these initiatives with glyphosate and with single-use plastics and all kinds of things. I'm going to get into specific policies, et cetera, but why do you think Europe is ahead of the rest of the world, including the US, on caring and researching and changing policies on plastics?

Jane Muncke (00:24:55):

So I think there's been a lot of movement here, a grassroots movement. So I think the ban that we have on single-use plastics, that was thanks to really well-coordinated campaigning. But I have to say that the first country in the world that banned plastic bags was not in Europe, it was Rwanda actually, in Africa. So I think, shout out to my fellow Africans. I'm South African originally. So Europe often gets touted with being very advanced on chemicals, and there is a good reason for that. In 2020, we got the European Chemical Strategy for sustainability, which is a great document. It's really, I

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would say, addressing key issues. It talks about removing the most harmful chemicals from food contact materials, like we call food packaging.

(00:25:59):

The point is, you can have the greatest rules in the world. If you're not enforcing them, they're worth nothing. And I think that is the biggest challenge in Europe right now with food packaging, with food contact materials. There are progressive rules to a certain extent, but they are not being enforced. So I don't feel that European citizens are better protected from these chemicals than people elsewhere in the world, to be honest.

Nate Hagens (00:26:28):

I was in Europe earlier this year. I can't remember what city it was, but I went to a grocery store and they had two sections of fruit and vegetables. And one of the sections was wrapped in plastics and little protective things, and the other wasn't. So in the United States, you don't have that. It's all one section. And also what's the deal with the shiny apples that they're so... Is there a film or is there some sort of treatment with that? Could you explain?

Jane Muncke (00:27:00):

Oh, I don't know, Nate. That sounds a lot like a Swiss supermarket that you're describing there.

Nate Hagens (00:27:05):

Yeah, it was probably Switzerland.

Jane Muncke (00:27:07):

Yes. So the reason for some produce being wrapped in plastic is actually that that is organic produce, and in Switzerland we have very strict rules on the pesticide content for organic foods. So if you have a supermarket that sells both conventional or pesticided produce and organic produce, and you have supermarket staff or customers touching first the pesticide produce and then touching the organic, you get carryover, and then your organic produce would not comply anymore with the regulations.

Nate Hagens (00:27:47):

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But what about the migration from the plastics? What if you had organic produce and you packaged it in plastics, would then there be... Well, I guess plastics are organic, as you said earlier.

Jane Muncke (00:28:02):

Yeah. Well, organic in the sense-

Nate Hagens (00:28:04):

But is there a migration, is my question.

Jane Muncke (00:28:06):

Yeah. Maybe just to sort out the terms there. We're talking about organic chemistry, which is called organic chemistry because it's made through living organisms. So it's the algae that fixate the carbon from the atmosphere using the energy from the sun. So they take inorganic carbon, CO₂, use sunlight energy, fixate that, turn it into their own little leaves or trunks or fruit. Or if it's algae, into whatever the algae have, cells. So that's why it's called organic carbon. Anything that's made from fossil carbon is organic chemistry, for that reason. It's the miracle of photosynthesis.

(00:28:52):

Organic farming is called organic farming because you use manure as a fertilizer. In conventional farming, you use inorganic fertilizer, which is derived from the Haber-Bosch process that was developed in the early 19th century by German scientists. And there you use a lot of energy, fossil, carbon energy to fixate nitrogen from the atmosphere. So our atmosphere, the air that we breathe consists mostly of nitrogen, 80% is nitrogen. So you just basically suck the nitrogen out of the air. Nitrogen is what plants need as a fertilizer. So that's why conventional farming, industrialized farming today uses inorganic fertilizer. Whereas biological, environmentally-friendly, regenerative farming uses organic fertilizer. So that's why it's called organic food, it's got nothing to do with organic chemistry. Very different concepts. Very confusing.

Nate Hagens (00:29:56):

So how does your refrigerator and pantry look different than most people's?

Jane Muncke (00:30:02):

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So maybe just to quickly go back to your question about the fruit and veg wrapped in plastic and the risk for migration. I think it's a really important question and that will also answer part of how my fridge and kitchen looks. So there's certain risk factors, we can call them, for increasing migration, and the most important one is heat. So if you put hot food or beverage into plastic, you get much faster and much higher migration. So fruit vegetable is not hot, it's always at ambient temperatures, oftentimes refrigerated, so I'm not so concerned about that being a risk for migration. The next risk factor is long storage times. If you store something-

Nate Hagens (00:30:46):

Well, hold on. Back on the first risk factor.

Jane Muncke (00:30:46):

Yeah.

Nate Hagens (00:30:51):

So a no-no, you should never heat food in plastic in the microwave, you should always put it in glass or something, yes?

Jane Muncke (00:30:58):

Yeah, exactly. So if you use a microwave, don't put plastic in there. Now we get these Christmas markets here in Europe, and people love to have mulled wine or hot teas that they buy at the Christmas market. And oftentimes they come in these polystyrene cups and I always cringe when I see that. It's so bad for health because the migration-

Nate Hagens (00:31:20):

Why?

Jane Muncke (00:31:20):

The migration is just so high. Polystyrene contains carcinogens and it contains endocrine disruptors. And if you put a hot beverage in there-

Nate Hagens (00:31:31):

So those are migrating from the cup into the hot beverage, into your stomach, into your bloodstream.

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Jane Muncke (00:31:40):

Yeah. Yes, exactly.

Nate Hagens (00:31:41):

Help me, because I remember reading this, and you and I are on a similar listserv, and there's just so much to read. Of course, we can't keep up. But I read that recently people's blood is testing positive for plastics in the blood. So what's up with that?

Jane Muncke (00:31:58):

Yeah. So that's the area of micro-nano plastic particles. So there's these two different types of plastics contaminants that we are concerned about. One are simply the chemical constituents, which can migrate at high temperatures, and a couple other factors that we can go into. And the other are micro-nano plastics that can be generated, for example, when you tear open food packaging or you unscrew a cap, but also from the environment you're sitting in, if you have a plastic material rug in your house, or you have plastic clothing, like a fleece and so on. And the fibers, you can inhale those or they can get into your beverage and then you ingest them. So it's two different things we're talking about there.

Nate Hagens (00:32:50):

So I know that there's no discrete answer to this, first of all, because no one knows. And second of all, to know we would need decades of research. But can you speculate based on what you know, that if someone regularly drinks hot beverages from a polystyrene cup, what might be the long-term health impacts of such a practice?

Jane Muncke (00:33:16):

Yeah. That's a tempting thing to answer, but I think it would be damaging to my reputation as a scientist. As I say, there's some endocrine disrupting chemicals that we're concerned about present in polystyrene. Endocrine disruptors interact with the endocrine system, the hormone system. And as you may know, the hormone system controls so many different functions of our bodies. It's not just reproductive functions, it's many, many, many other functions. So if you have chemicals that can disrupt the hormone system, you can get lots and lots and lots of different kinds of effects ranging from diabetes, obesity, cancers, infertility, other reproductive issues, neurological effects, allergies, cardiovascular disease, and so on and so forth.

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Nate Hagens (00:34:11):

So not to put you on the spot, but take your scientist hat off and put your human pattern recognition, looking at all your research, hat on. How many or what percentage of those things you just mentioned, cardiovascular disease, diabetes, all the other things, do you suspect could be somewhat or a medium amount linked to plastics?

Jane Muncke (00:34:39):

I don't know. Nate, that's really hard. Anywhere from 10-50%.

Nate Hagens (00:34:42):

But greater than zero?

Jane Muncke (00:34:44):

Yeah, definitely. I think even greater than 10%. We don't have the data to prove it, but that's my gut feeling.

Nate Hagens (00:34:51):

Right. Well, it's just like climate change. By the time we have data to absolutely prove, then it's like, "Oh, 50 years ago we shouldn't have used plastics to wrap our food."

Jane Muncke (00:35:01):

Oh, god. Yeah.

Nate Hagens (00:35:01):

Right?

Jane Muncke (00:35:02):

Well, I can tell you this. We know that all of these chronic diseases, these non-communicable diseases are increasing globally. It's not just in Switzerland and in the US, but it's really globally. We know that chemicals can affect these diseases, and we know that some of these chemicals leach from food packaging, they migrate. So that's really an easy place to start. I think it's a huge, huge opportunity for prevention. I don't know how many cases exactly you would prevent. I hope someone can work that out. But I think it's something that should be looked into. And as well, I think we do need to have a much better understanding of what the chemicals actually are that

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transfer from food packaging into food. As I said before, even the companies that make these materials, the companies that put their foods into these materials, they don't know exactly what's migrating, and I find that morally really problematic. They make a lot of money with these products and they're putting all the risk on the side of people who buy these products and who think that it's a good, healthy product.

Nate Hagens (00:36:14):

I probably have too many questions for you, Jane, that you don't know the answer to, but I'll ask them nonetheless. So there is research showing that the top social media CEOs and execs, like Facebook and others, don't allow their children to use social media on their iPhones. Do you think the plastic execs at DuPont and other places, do their fridges and pantries look similar to yours, or do they just eat the same way as everyone else does?

Jane Muncke (00:36:45):

Probably. They also know the impacts of ultra-processed heavily plastic-packaged foods. I hope for their own health's sake that they are not consuming those foods, as no one should. And I think here's the other moral dilemma that these food companies, these business models, they have created a want for these products and they continue to create it with very clever marketing. And I'm very concerned about this marketing of food products, because it eats its way into people's subconscious and it affects the purchasing decisions that people make. And we often hear that we need people to be more responsible about what they consume and so on, and at the same time, we have all this continuous marketing, not only in social media.

(00:37:40):

And oftentimes also people's behavior is blamed for a lot of food waste. They say, "Oh yeah, we need more packaging to prevent food waste. And people shouldn't be throwing away so much food at home." But at the same time, then you're marketing like mega super cheap deals, "Buy this pack of a hundred different cookie packs and get it now." And then of course, the stuff, you can't eat all of it, so you throw it away. So there's an evil vicious circle going on there, which I'm very worried about.

Nate Hagens (00:38:14):

So getting back to the, we were talking about heating food and what were some of the other categories that you were going to...

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Jane Muncke (00:38:23):

So another risk for migration is long storage time. So if you have foodstuffs that you're storing over a long time, and that's especially the case for paper and cardboard food packaging. People often think paper, cardboard, it's got to be better than plastic. But I'm really concerned about migration of chemicals, especially if it's recycled paper and cardboard. Those, you shouldn't store for two, three years in your pantry, packaged in paper or cardboard. It's better to, once you've bought them, put them into a glass container or a ceramic or stainless steel container.

Nate Hagens (00:39:04):

Here's another unanswerable question. If everyone in the world did what you just suggested, we wouldn't have enough glass, would we?

Jane Muncke (00:39:15):

I don't think so, Nate. I think there's plenty of glass to go around. The benefit of glass is that it's truly circular. As a material, you can recycle it. If you have the collection and the sorting done well, if you have separate collection. I know in the US that's a challenge because you co-mingle, which means you throw all the materials into the same bin and then the glass breaks and it contaminates the paper and so on. So co-mingling is not a good idea, but if you have separate collection of your materials, glass is very well recyclable. You need a lot of energy to melt glass, of course. So it's better to re-use it before you recycle it.

Nate Hagens (00:40:01):

Yeah. Every Saturday I go to the dump here and they have the cardboard bins and the plastic bins and then the garbage and then the metals, and it is just astronomical the amount of waste that we produce. Me, even, and I'm conscious of these issues. But living in the modern world and leading busy lives and going to the store and buying food, the consumers don't have the intelligent, environmental, ecotoxicology-approved options unless they do a lot of work and pay a lot of money probably and spend a lot of time.

Jane Muncke (00:40:47):

Yeah. There's a really nice scientific publication that I like a lot by an Australian group where they looked at the drivers for single-use food packaging, and the drivers there are the big food globalized business model, the supermarket business model, which is

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increasingly prevalent, and the lack of time that we... And we are called consumers, I don't like that, we're citizens.

Nate Hagens (00:41:18):

I don't either. I know.

Jane Muncke (00:41:18):

We're humans.

Nate Hagens (00:41:18):

We're humans.

Jane Muncke (00:41:20):

But consumers have less time to peel potatoes and put them in the oven because we're always running around and looking at social media, so we run out of time to eat real food and we have to shop at supermarkets.

Nate Hagens (00:41:41):

Okay, so what are the other problems that food packaging pose? There's the long-term storage. There's the migration that happens when heating. There's the damage to the landfills and the oceans where a lot of this waste ends up. Is there anything else?

Jane Muncke (00:41:58):

There's interaction with the food, for example. So if you have foodstuffs that are very acidic or have alcohol content, for example, that will lead to increased migration. Fat content, of course. One of the properties of plastics is that it's what we call very lipophilic. So many of the constituents in plastic nicely dissolve in fat, and so if you've got high fat content food, you can get a lot of migration. So the worst would probably be high fat content, high acidity, and hot foodstuff. There you really max out migration.

Nate Hagens (00:42:40):

So you wouldn't want to drink a hot buttered rum in a plastic cup?

Jane Muncke (00:42:45):

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No, exactly. Mulled wine, or coffee even. Coffee where you put a bit of milk. Yeah, I don't do that.

Nate Hagens (00:42:55):

So the Starbucks model is a problem.

Jane Muncke (00:42:59):

Of course. Not only Starbucks, but other fast serve food restaurants that depend on single use food packaging.

Nate Hagens (00:43:10):

Not to single out Starbucks, there's tons of similar companies. But put on your scientist hat again, could there ever begin to be a scientific study that would say, "Let's look at this control group of people that drink their coffee out of ceramic or glass mugs versus these people that drink two Starbucks a day in the plastic cups that are heated and look at the chemical load that comes from that." Is that something that could be studied?

Jane Muncke (00:43:45):

I think so. I think there's also a lot else to be said for having a ceramic mug and sitting down and having a conversation with a human being while you're enjoying your coffee.

Nate Hagens (00:43:56):

Right.

Jane Muncke (00:43:56):

Instead of grabbing it, jumping in your car or staring at social media while you go from A to B.

Nate Hagens (00:44:01):

Right. So there's multiple behavioral downsides of plastic, because plastic impacts your health due to drop in sperm count, endocrine disrupting, hormone mimicking, all that stuff. But it also is part and parcel of the just-in-time frenetic culture.

Jane Muncke (00:44:23):

Yeah. Yeah.

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Nate Hagens (00:44:24):

So using glass and ceramic, not so metaphorically, would be like the slow food movement.

Jane Muncke (00:44:34):

Yeah. Exactly. That's why I say plastic enables this over-consumptive lifestyle. We're over-consuming as human beings. We're over-consuming our resources. We're consuming more stuff than we need. Almost 40% of the global population today are overweight. You've got more people that are overweight than people that are underweight. You've got more than 10% of people globally that are obese.

Nate Hagens (00:45:03):

40% in the USA.

Jane Muncke (00:45:06):

It's globally, it's 39% percent globally. 40% obese in the US. Yeah, exactly.

Nate Hagens (00:45:11):

In the US. Yeah. Not overweight. 39% percent, 39 point something percent are obese.

Jane Muncke (00:45:16):

Yeah. Yeah. It's mad.

Nate Hagens (00:45:17):

And that, we don't know if that's... Clearly that's due to many things, but it could be endocrine disrupting chemicals changing our metabolism and other things.

Jane Muncke (00:45:28):

Yeah. So there's a fantastic book that came out earlier this year by Chris van Tulleken, a British medical scientist, and it's called Ultra-Processed People. And he breaks down different reasons why people are overconsuming foods. And again, as you say, it's multifactorial, it's not the one single reason. It's the marketing, it's the ultra-processing, it's all the emulsifiers and things that... You covered that nicely in the podcast with Robert Lustig. But I think what they're missing in that analysis is the role of not just food packaging, but also the food processing equipment. Because food processing equipment also oftentimes is made of plastic or it's got like lacquers and varnishes.

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Nate Hagens (00:46:14):

And so there's migration from the equipment to the food.

Jane Muncke (00:46:17):

There's migration from the equipment. So the more processed your food is, the more synthetic chemical contamination it will have.

Nate Hagens (00:46:25):

So some people that we know keep telling me that plastics may be as big of a crisis for humanity in the future as climate change. What are your thoughts on that?

Jane Muncke (00:46:37):

Well, again, it's maybe almost academic to try and rank these.

Nate Hagens (00:46:42):

Right.

Jane Muncke (00:46:42):

I do think that we have a huge health crisis, and I really believe people should have a healthy and happy life. And if you're born with obesity and if you're born into a community where you can't get real food, where you just get, as Chris van Tulleken says it, edible substances. He doesn't even call it food. It really impacts your quality of life. And what I'm really worried about on a population level is that all of these people will not be contributing to our community of human beings that want to solve the climate crisis and that want to solve all the other crises, because they're too sick to contribute.

Nate Hagens (00:47:25):

Oh, god.

Jane Muncke (00:47:25):

So it's these aspects, they reinforce themselves. And we haven't talked about impacts on the brain, that's a huge concern. And we know that there are chemicals like perchlorate, which we know affect brain health and they're legally used in food packaging. I can't get my head around this. I just find that really, really, really disturbing. Or organophosphates.

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Nate Hagens (00:47:54):

Tell me what the impacts are on the brain. You mentioned some of the chemicals. What would be the impacts on the brain?

Jane Muncke (00:48:02):

Well, I'm not an expert on the brain impacts, but I think first and foremost, it's IQ loss. So on an individual level, maybe that doesn't have such a dramatic effect, but if you look at a population, a whole human population that has two or three or four IQ points less than it should be having, that has a huge impact. That's going to impact our societal problem solving capabilities. But it's also behavioral impacts. It's things like autism, it's things like ADHD, it's all kinds of mental health issues, which we are seeing more and more of.

Nate Hagens (00:48:48):

So you've told me some stories where you've gone to some international plastics, I don't know what they're called, the conventions or the UN meetings, and there's a real filibustering going on with the corporations and stuff. How are scientists that are studying hazardous chemicals and working in your field in nonprofit, pro-environment, pro-future in food packaging, how are they being excluded from joining the policy conversations that involve regulations on this stuff?

Jane Muncke (00:49:28):

I can tell you an anecdote that goes back eight years, 2015. I was invited to an expert stakeholder group at the European Commission on Food Contact Materials. And I'd been going there for a couple of years, and this was around the time when the European Union was talking a lot about endocrine disruptors and bisphenol A repeatedly was an issue. And France at the time had banned bisphenol A for use in food packaging, which was a really great progressive move, but it was in legal conflict with the European Union. Because the European Union actually has the authority over chemicals and food contact plastics. So I had asked my contact at the European Commission if they would be providing an update on this BPA issue in the next stakeholder meeting. And then I'd got an answer, "We've changed the rules for participation in this meeting and you no longer qualify, so you're not invited to come."
(00:50:38):

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So what had happened was I took the plane to Brussels, I have to confess, and I'd booked overlapping flights because you get cheaper deals then. So I'd booked a trip from Zurich to Brussels, and then four weeks later, so a return trip, and then another flight from Brussels to Zurich and so on. So in order to be able to go to Brussels the second time, I had to take that first flight to Brussels, otherwise I would've lost both tickets. So I thought, "Okay, I've got the invitation letter, I've got the plane ticket, I'll just go, see what happens." So I got through security. I was a bit late because my plane had a delay. So I got late to the meeting and I walked in the room and immediately as I set foot in the meeting room, someone from the commission got up and ran over to me and said, "You are not welcome here. Leave. Please leave."

(00:51:30):

And I'm like, "Okay, well let's go outside and have a conversation." So I had a conversation with this person that I hadn't met before, and I showed her my invitation letter and I said, "Look, I have an invitation. I don't know why you're asking me to leave." And then after arguing for a few minutes, she said, "Okay, I will let you back in the meeting room now, because I don't have proof that you're not allowed to be here." And then she said as we were walking back in, "We don't want people making trouble from the back rows." So I guess that simple question had...

Nate Hagens (00:52:03):

Let me ask a follow-up to that. So if we might say that regulators aren't doing their jobs because they're overly influenced by industry, but what if limiting change on these issues so as not to cause a fuss from the back row and disturb key industrial interests is their job? What if that is the job of regulators in a plastics version of the Superorganism, outsourcing our wisdom to the market? Because I know at least in the United States, I have some friends of mine that have been toxic activists for decades fighting regulations, and there's almost nothing to show for it, if you measure the total tonnage of toxic chemicals being released. So what are your thoughts on there and what is the potential for real change on this issue, realistically?

Jane Muncke (00:53:04):

Yeah. That's a very deep philosophical question. I've asked myself that question as well. I do want to defend the regulators a little bit. They have a hard job. In my understanding, their job is to look out for the citizens of the country where they are working because we pay their salaries from our taxes. But at the same time, of course,

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and especially when it comes to food, you don't want to risk any food shortages on the shelves. And there's this scientist here in Switzerland who does enforcement. He used to work for the local food control authority and he once said to me, "If we would truly enforce the rules that we have on food packaging, we'd have to go to the supermarkets and clear out the shelves. It's so bad."

(00:53:57):

And then of course, you have a huge riot because people aren't eating. So it's difficult also for regulators because they've been allowing these products on the market for 40, 50 years now. And then to stand up and say, "You know what? Actually there's a few problems and we haven't been noticing them, so now we have to change the whole system." They'd lose face as well, so it's complicated.

Nate Hagens (00:54:25):

So given that shortening global supply chains and re-localizing is something that I think is inevitable and is one of the implied themes of this channel, could we short circuit this problem by opting out of big industrial food? And how much of this could be solved by just shortening food supply chains and eating more local?

Jane Muncke (00:54:49):

I think part of the problem is that these ultra-processed foods are very cheap because they work in these highly efficient economic business models.

Nate Hagens (00:55:06):

So there's an inequality issue at play here too.

Jane Muncke (00:55:09):

Yeah. Exactly. Exactly. And it's more than that. Well, we say time is money, right? If you don't buy these pre-processed or ultra-processed foods, you need a lot of time to source your foods and to prepare them and to cook. So it's almost a different lifestyle. In my family, we love to cook. We spend a lot of time cooking and enjoying meals together because for us, that's quality of life. But for some people, it's just easier to buy the deep-frozen pizza and chuck it in the oven and do something else with the time then and they don't necessarily appreciate the value of cooking foods yourself. So I think it's an economic issue, it's a time issue, it's also maybe an issue of being more humble with what you eat. If you want to eat seasonal, locally grown foods in

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Switzerland in winter, you're eating potatoes and cabbage, and some cheese, some dried meat. It's not a rich variety of foods that you have then through the winter month. And so for some people-

Nate Hagens (00:56:23):

Well, I have say this, and this is off-topic kind of, but when you stay at a hotel in Switzerland and maybe elsewhere, the breakfast buffets are un-freaking-believable, relative to what you get staying at a hotel in America. You get these formed hash browns and a hard-boiled egg and a granola bar. In Switzerland it's like nine kinds of cheeses and different types of muesli and all kinds of organic yogurt. And oh my God, it's so good.

Jane Muncke (00:56:57):

Well, thanks for advertising for my country.

Nate Hagens (00:57:01):

Well, where does that come from? Part of that's culture, but I think it's time is money. You stay at a Hampton Inn, or a Ramada, or a Holiday Inn Express, and it's just crap. And then you start your day off with this ultra processed... We don't even have an option. What would it take to just change the breakfast options at hotels? Literally, what would it take? Would it take a subsidy from the government to give healthy options, or would it be a boycott by consumers to say, "I don't want that crappy breakfast. I want a Swiss breakfast, and I'm willing to pay \$10 more for that." What would it take? Or would it take people getting sick and scientific reports coming out and saying, "This is due to ultra-processed food and the migration from the plastics into the food that you're eating."

Jane Muncke (00:57:52):

You're having this conversation about breakfast with probably the worst possible person, because I'm not a breakfast person. I often do intermittent fasting in the morning, so I skip that meal. But I do want to say this in his book, the Ultra-Processed People, Chris van Tulleken gives this recommendation to start with your breakfast. Because that's a meal that you can actually have control over. So don't have those fancy cereal, ultra-processed stuff that colors your milk in funny colors. Eat muesli. Yeah, it's Swiss invention. Have yogurt. That's what I eat when I have breakfast, yogurt and fruit.

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Nate Hagens (00:58:30):

I have started eating breakfast at 10 or 11 in the morning, so it's pseudo intermittent fasting.

Jane Muncke (00:58:36):

Yeah.

Nate Hagens (00:58:37):

And because of where I live and what I do, I often have eggs and potatoes because they're both from the farm here. Not always, but most days. So Jane, what coalitions and partnerships in your work at the Food Packaging Forum have you influenced or created, anything that our viewers might be surprised at?

Jane Muncke (00:59:04):

Yeah. Mostly we work with academics because for us that's really important as part of our work to be very science-based. But we do have an ongoing collaboration with the Swiss Organic Farming Association, Bio Suisse, where we're working with them on their packaging recommendations. I can share that with you, we've got a detailed risk framework for migration, which may be useful to some people. That's published in English. Another collaboration that we have is with the Understanding Packaging Scorecard project, and a freely available web-based tool where you can compare different packaging options for the food service industry. So it's cafeterias, restaurants and so on. It's not the retail industry.

(01:00:01):

And you can compare them according to six different metrics. So it's chemicals, but it's also impact on climate, so CO2 emissions, CO2 footprint, fresh water use, and there's a couple others. And that is a collaboration where we work with big food service providers, big companies. You probably don't know them because they're not B2C brands, but we've got Compass Group, which is the largest food service provider, operates cafeterias across the world, Sodexo, Aramark. And that collaboration was actually initiated by Google. Now, that's maybe quite interesting.

(01:00:46):

And then the last one, which wasn't so much an active collaboration, but I know that we did inspire that work. In the US there's an organization called the Food Safety Alliance for Packaging. And that's big food brands like Nestle, for example, Mars

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Wrigley, a couple others. They put together a list of chemicals that they do not want to see in the packaging that they procure from their suppliers, and that's called the packaging stewardship considerations. And I do know that our work was really pivotal and informative for that.

Nate Hagens (01:01:22):

That's great. So when you say that you interact mostly with academic researchers and institutions, would that be in the discipline or field of ecotoxicology? Is that what it's called?

Jane Muncke (01:01:39):

Yeah. So that's my background. But no, we really have very interdisciplinary interactions. So we work with economists as well. We work with public health experts. We work with people who are focused on obesogens and nutrition.

Nate Hagens (01:01:59):

Other than you, I don't know anyone that has that PhD background in ecotoxicology. Relative to 20 or 30 years ago, are there a lot more people studying that at universities today?

Jane Muncke (01:02:12):

I don't know, Nate, because I'm not really active in the academic environment. But I do see younger colleagues coming to the conferences, so I guess it continues to be a popular field. Like all the environmental science disciplines, it's very interdisciplinary. I think people don't understand that why, but the environmental problems that we're dealing with are very, very complex. So environmental scientists often have a really good overview over many different areas, but they often don't have very in-depth detailed expertise. So for me, my in-depth detailed expertise, of course, is chemicals in food content materials. But I'm also trained to at least superficially understand different disciplines. So we are almost like translators or interpreters between the different disciplines, and we take this role of enabling dialogue and collaboration between the disciplines. Which I think is going to be increasingly important, if we want to solve these environmental problems.

Nate Hagens (01:03:19):

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I totally agree. So with global heating, with the exception of half of the United States population, most of the rest of the world now understands what is happening to the climate and why. But there are very well-funded and high-paid, organized communication efforts against that to cast doubt, et cetera. Do you see that at all in plastics? Are there people saying, "Oh, plastics aren't a problem and you're a chicken little, and I'm going to drink this glyphosate." And is that happening in that arena as well, or not? I don't know.

Jane Muncke (01:04:09):

Oh yeah, big time. Big time. You make it sound cute. It's actually really rather unpleasant to be at the receiving end of that kind of manufacturing of doubt, but it's part of my daily work almost. So when I go to conferences, when I speak on panels, I always brace myself for that one question that will come and try and discredit me as a person or discredit my organization because of the funding that we get, the donations that we get. Or then there's this whole playbook of manufacturing doubt, then they'll say, "Yeah, well, we know that also caffeine is an endocrine disruptor, so why are you worried about these chemicals?" And it's like the whole plethora of... It's very creative. Originates from the tobacco industry.

(01:05:00):

So some very clever public relations people came up with this Doubt is Your Product slogan, and hence we call it manufacturing doubt. Because as you know, as a scientist, there's no such thing as absolute truth. There's always that little tiny probability that it could be something else. And we saw that with climate change where 99.9% of scientists working on it with topical expertise said, "It's a real problem. We should do something." And then they found one or two crazy people who said, "No, no, it's all good. Don't worry about it." And it also has to do with media reporting, I think, unfortunately. Because the media, they love stories, and stories always have to have conflict. So if you say, "Okay, all scientists agree." That's a boring story. So you'll say, "Most scientists agree, but some say..." And then people will focus on that and it just gives much more attention to people who should not be covered in the media.

Nate Hagens (01:06:06):

So what would be the steel-man argument on the other side that would take the point that plastics are essential, they're not a problem at all to human health. Could you easily debunk such a statement?

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Jane Muncke (01:06:25):

Well, I think one of them, when it comes to food packaging, is food waste. We need packaging to prevent food waste. And the prime example that I always get pestered with are the fresh cucumbers in December when it's not cucumber season in Switzerland, and they import them from Spain or even Morocco, even worse. And in order to prevent those cucumbers to waste before they get sold in the supermarket, you have to shrink wrap them in plastic. The point is, making cucumbers in Southern Europe or in Northern Africa during our winter is not sustainable in any case. So that's a product we shouldn't be buying at all in the first place.

(01:07:11):

The second point is we have all these subsidies into overproduction of foods. We don't need to overproduce foods. We really don't. We shouldn't be subsidizing industrial agriculture that overproduces food crops. We shouldn't be having sales at supermarkets where people get nudged in a bad way to over-consume, buy more food than they actually need and want to eat. So once you've dealt with all of that, including the marketing, then let's talk about food waste and the necessity for food packaging.

Nate Hagens (01:07:51):

I actually like those English cucumbers that I hadn't thought about it until now, but they do come shrink-wrapped. I like the taste of those better than the other ones, but I shouldn't be buying those, the ones in the plastic?

Jane Muncke (01:08:04):

Well, if you want to continue to feed the beast, which is the unsustainable food production-

Nate Hagens (01:08:12):

No, no, no. I'm learning from you. I want to make changes. I just took that for granted because I have a slight taste preference for those.

Jane Muncke (01:08:19):

I love them.

Nate Hagens (01:08:23):

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But I have a large life ethic that if I stop and just think for a second, that life ethic outweighs my slight preference for the wrapped cucumbers.

Jane Muncke (01:08:34):

Yeah. I think you should enjoy food, by all means. I love eating. But I think ideally, you will enjoy the food that is seasonal and locally grown, and preferably organically grown. And if it's seasonal, you don't need to buy shrink-wrapped food.

Nate Hagens (01:08:50):

So building on that, before I ask you some questions that... I know you listen to my podcast, so you may know what's coming. But what can viewers and listeners of this program do in addition to eschewing the English wrapped cucumbers, as conscious consumers, to protect themselves? In the absence of large systemic change and regulations and policy and rules, what can people do to eat healthier from the perspective of migration and other problems with packaging into their food?

Jane Muncke (01:09:31):

Yeah, I think the first thing that's easy, go into your kitchen, make sure you don't have black plastic cooking utensils.

Nate Hagens (01:09:39):

Really?

Jane Muncke (01:09:40):

Yeah. I hate those. Get rid of those.

Nate Hagens (01:09:43):

You mean like a black plastic spatula?

Jane Muncke (01:09:45):

Yeah. Yeah.

Nate Hagens (01:09:46):

I have one of those.

Jane Muncke (01:09:47):

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Yeah. Black plastic is terrible.

Nate Hagens (01:09:49):

Why?

Jane Muncke (01:09:50):

Because they contain many known carcinogenic substances and they're one of the products that are actually enforced in Europe, and oftentimes they don't make it through the enforcement.

Nate Hagens (01:10:08):

And let me guess why I have one and why other people use them, because they're cheap.

Jane Muncke (01:10:10):

Yeah. But just get a wooden one, or use a stainless steel one. Not if it's a hot, hot soup because then you'll burn yourself, but wood is fine. Use the black plastic one if it's not hot food, but I got rid of all of those. And then just follow the rules, don't have hot, acidic, fatty foodstuff in contact with plastic. We have a wooden chopping board at home. We have glass or stainless steel storage containers for the foods that we keep in the fridge. I don't have a microwave, I heat them in the saucepan on the stove. So yeah, I really try and minimize plastic and hot, fatty, acidic foodstuff contact.

(01:10:53):

And then I think other than that, don't drive yourself crazy over it. I think at a certain stage you have to just accept that it's something that you just have to, to a certain degree, go with the flow and try and eat real food. Cook your own food. Buy ingredients from scratch and embrace making your own food. You know what, we just got at home... My family eats a lot of ice cream and I'm really worried about ice cream, it always comes in plastic packaging. It's got a lot of emulsifiers. It's ultra processed food. So we just got ourselves an Italian ice cream maker, so we make our own ice cream and it tastes so much better.

Nate Hagens (01:11:38):

This is like with everything else, you have to... And my coach is talking about the difference between productivity in my own life and awareness. And you just need to,

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with all these things, just have a little bit of a conscious reality check of your behaviors. Like after this call, I'm going to go look in the kitchen and see, just take a census. What is the plastic that I have here that I just blindly assumed was fine because it was sold to me? Beyond plastic, you are a colleague of mine in looking at the broader meta crisis. So broadening your plastic hat to being a human alive at this time hat, do you have any advice to listeners who are becoming aware of climate, plastics, energy depletion, everything else?

Jane Muncke (01:12:40):

Well, I think it's a lot of the things that we've touched upon. It's really becoming a conscious, well, consumer. There it is again, that ugly word. But yeah, in this case it's fair. I think it really helps to understand that you get side effects if you try and cut corners somewhere. Like if it's too convenient, if it's too cheap or whatever, it's probably not going to be so good for your health. And I think just be kind to yourself, be kind to others, socialize with good people. Be careful of what you eat in the sense of where does it come from, how was it grown, how was it processed, how was it packaged? But also who are you sharing your meals with? I think those are all things that affect a good life.

Nate Hagens (01:13:42):

The answer in my case is most often of the time, is my dogs.

Jane Muncke (01:13:45):

Good. Great. Good company.

Nate Hagens (01:13:48):

They lick the plates afterwards. Yes. So what about young humans? I know you have teenage children. How would you extend that advice to young humans who are listening to this and thinking about their own future in this amazing and perilous time?

Jane Muncke (01:14:11):

I think we have a brain for a reason. And as much as I love all these digital tools and devices, I think you should actively use your own brain. Learn how to read maps. I love all these navigation tools and so on, but it's also helpful to not turn off your own brain as you're making your life easier with these digital tools. So learn how to cook,

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something simple as that. Learn how to make a good meal from scratch. That you don't get dependent on all these too good to be true products out there. Do stuff yourself. Go out into nature. Read. Read as much as you can. Have discussions with people that are smarter than you. I find that very rewarding, talking to people like you and all of our colleagues who I incredibly admire.

(01:15:05):

And actively reflect and learn to become critical thinkers, I think that's the most important. Because when I look at the future with AI and all these fake videos and images and so on, that really terrifies me. So I think that's really important, to have a good common sense. What actually is real? What's our metaphysical reality and what's the fake world, the metaverse?

Nate Hagens (01:15:37):

That's very good advice. And I am not a good cook, but I can cook like three or maybe four things really well. And those things I know, but I should probably add. I can make a Thai curry, I can make spaghetti with mushroom and red sauce, mostly from the garden. I can make fried fish and I make really good hash browns with garlic and onions from the garden.

Jane Muncke (01:16:02):

Sounds delicious. I'm getting hungry. One of the tricks for making sure your mental health is good is to challenge yourself. You have to challenge yourself. Don't get too comfortable. So maybe I'll send you a few recipes and then you can challenge yourself and add a few more dishes to your repertoire.

Nate Hagens (01:16:21):

Okay. Good. Few more questions, Jane. Not to put you on the spot, but what do you care most about in the world?

Jane Muncke (01:16:30):

I care most about relationships. I think relationships are what make us human. I think relationships are the most important thing for a functioning, healthy society. And I think relationships are important to maintain a peaceful world. So I think I'm incredibly blessed. I have such a wonderful family. My husband, my children, my dad, who's still alive and kicking at 83, who's a great source of inspiration for me. But also

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my colleagues here at work, people like you in my wider network. I'm very, very grateful to have that. So I think people should invest more time in their relationships.

Nate Hagens (01:17:18):

I've never said it the way that you just said it, I just took it for granted. But you're absolutely right, relationships are at the core. Including our relationship with the natural world in our own individual ways.

Jane Muncke (01:17:33):

Yes, absolutely.

Nate Hagens (01:17:33):

If you could wave-

Jane Muncke (01:17:33):

Hey, I talk to my plants.

Nate Hagens (01:17:34):

You do?

Jane Muncke (01:17:38):

Yes. I've got some plants that I've had for more than 20 years. Pot plants that... Yeah. Anyway.

Nate Hagens (01:17:43):

Yeah. If you could wave a magic wand and there was no personal recourse to your status or anything, what is one thing you would do to improve our human predicament and planetary futures?

Jane Muncke (01:17:58):

I would have fully safe food packaging and food contact materials. So that means materials that do not contain known hazardous chemicals and that do not contain untested chemicals. Because for untested chemicals, by logic, you can't say if they're harmful or not. You don't know. So if you take a precautionary approach to life, which I do, you would have to assume they're hazardous. That's a bit boring. Maybe a more creative answer would be, I would make everyone go work in a field or in a garden at

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least one or two days a year to produce their own food. Just to get in contact with nature again and to have an appreciation of how hard it is to produce food, but also how beautiful it is then to eat your own food.

Nate Hagens (01:18:53):

And then after one or two days spent in the fields, they should go for one or two days to the food packaging factory and see how it all happens.

Jane Muncke (01:18:58):

Yeah. Yes.

Nate Hagens (01:19:00):

Thank you very much for your time and your continued work on this Jane. I'm sorry I missed you on my last trip, but we will definitely be in touch and thanks for all your work.

Jane Muncke (01:19:13):

Thank you so much, Nate. And thank you for all your work. I just admire what you do. It's great. Thanks.

Nate Hagens (01:19:20):

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