# Podcast: Ultra-Processed Foods (Part 4) Transcript

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## Packaging Contaminants in Ultra-Processed Foods

We have lots of choices to make about our diet and to that doing the right thing when it comes to treating a chronic disease or fighting a virus or losing weight and suddenly our nutrition choices can seem almost overwhelming. Well, I'm here to help. Welcome to the NutritionFacts podcast. I'm your host Dr. Michael Greger.

Today we continue our series on ultra-processed foods and we start with a story on the health effects of the mineral oils, phthalates and bisphenols leaching from packaging materials. Looking at a food label, we can see that many ultra-processed foods are high in salt, sugar and calories and low in nutrition and may contain food additives with questionable safety. Missing from the label are contaminants from processing as well as contaminants that migrate into the food from the packaging materials. Bisphenols like BPA, plastics compounds like phthalates and microplastics as well as mineral oils.

Evidently the mineral oils come from the printing inks from recycled newspapers used in paperboard packaging which can then migrate into the food and then accumulate in human tissues to levels that have been found to be harmful in a certain strain of rats. But the relevance to humans has been questioned since apparently we can't even extrapolate the results from that strain of rats to another strain of rats.

Plastic materials that contact our food may contain thousands of different molecules which more than 300 have been considered as potentially risky including phthalates which along with bisphenols may have hormone modulating effects. Have people switch from packaged foods to fresh foods for even just a few days and evidence of exposure to the measured bisphenols and phthalates based on urine samples drops significantly.

The packaging is certainly not limited to ultra-processed foods. If we look at the association between the consumption of ultra-processed foods and how many phthalates and bisphenols are flowing through our system, researchers found higher levels of four phthalates and BPF associated with higher consumption of ultra-processed foods.

But there was a lack of association with the most common ones, DEHP and BPA, and an inverse association for BPS, meaning the more ultra-processed ones diet, the lower the exposure. This makes sense since in the food supply, BPS has only been found in meat, most of which is considered minimally processed, with two exceptions. Basically, with BPA, which is used to line cans, only about half these products are ultra-processed compared to moderately processed. In terms of phthalates in our diet, the highest levels of DEHP per serving were found in poultry.

## Hidden Chemical Exposure from Food Packaging

So if we look at dietary intake and phthalate body burden, DEHP levels were associated with the consumption of poultry, presumably most of which was minimally processed. That helps explain why eating vegetarian for a few days can also lead to significant decreases in phthalate exposure, though presumably they also cut down on ultra-processed foods during that time.

Although phthalates are best known as hormone disruptors with potential testicular toxicity, ovarian toxicity, and endometriosis, there's also concern about kidney toxicity, nerve damage, liver damage, and heart damage. Exposure to BPA, the best is associated with congenital abnormalities, diabetes, polycystic ovary syndrome, obesity, and cardiovascular disease.

At first, we didn't think the migration of BPA into foods was high enough to exceed safety levels, but then oopsie, we realized there is significant evidence of potential harm from levels of BPAs in food well below current regulations, and well below levels consumers have been regularly exposed to. Yet, we continue to produce millions of tons of this stuff. So, it's no surprise that nearly 90% of us have trace levels of the stuff flowing through us on a

day-to-day basis. But, it depends on what we eat. Randomized people eating a serving of canned soup every day for 5 days and see a 1,000% rise in BPA levels compared to eating soup every day made from fresh ingredients. In this case, the soup was ultra-processed, but it's more about what the cans were lined with. Here's a non-exhaustive list of brands that do not use BPA in their canned goods.

So, yes, we can look for BPA-free on the label, just like we can check labels to see if some ultra-processed product is low in added sugar, salt, and saturated fat. And we can also scan the ingredients list for additives we now know may be harmful. But, do you see the problem? Many were considered harmless until they weren't, like the BPA and aspartame stories. And the artificial colors and flavors that were in the food supply for decades before they were banned? Remember when the food industry thought partially hydrogenated oils were a good idea? Let's replace saturated fats with trans fats. Although many countries now restrict their use, trans fats may continue to kill up to half a million people around the world each year.

Of course, excess saturated fat is probably also killing hundreds of thousands a year. But, the point is that trans fats from partially hydrogenated vegetable oil killed people for decades before there were any limits on it. The FDA didn't ban trans fats until more than 25 years after the first solid evidence emerged that it increased the risk of heart disease.

## Why Ultra-Processed Foods Lose Phytonutrients

From the time we knew until the time it was banned, every one of those years trans fats were killing up to 50,000 Americans each year. That's quite the death toll that can be laid at the feet of the ultra-processed food industry.

But, they originally thought it was safe. That's the problem. Anytime some chemical company comes up with a new preservative or sweetener or artificial color, we have no idea how it'll eventually turn out. So, you can start to see the value of this ultra-processed food concept where an entire category of products is essentially presumed guilty until proven innocent. That drives the food industry crazy, but look at its track record. Look at the trail of bodies it's left behind.

Did you know that we track only about 150 key nutritional components, just a tiny [music] fraction of the more than 26,000 compounds present in our food?

Here's the story. Ultra-processed foods don't only negatively impact nutritional status through a relative lack of micronutrients like essential vitamins and minerals, but also by lacking phytonutrients, the thousands of plant nutrients that aren't listed on the ingredients labels that may benefit our health. For instance, polyphenols. They aren't technically essential in that they aren't necessary for life, but they may be necessary for a long life, so they're considered lifespan essentials.

Our primary understanding of how diet affects health is limited to the 150 key nutritional components that are tracked and cataloged in nutritional databases, but these represent only a tiny fraction of the more than 26,000 distinct definable compounds present in our food. Many which have documented effects on health, but remain unquantified in any systemic fashion across different individual foods. There 8,000 kinds of polyphenols alone. When brown rice started to be polished into white rice, people started to die in mass from a nutrient deficiency disease, beriberi, became one of the most common diseases in Asia because the germ and the bran that got removed from the rice were where the B vitamin thiamine was. So, Miller started fortifying the polished white rice by adding back the thiamine that had been removed. But, what about all the other phytonutrients that are lost? And that's just going from brown rice to white, which is considered a moderate level of processing. Think how much is lost when rice is turned into an ultra-processed product like brown rice syrup. Or if you take a whole soybean and end up with just soy lecithin for that matter.

The outdated view of nutrition and public health just have to tick off all the basic boxes to prevent deficiencies. That allows food manufacturers to boast that their marshmallows aren't just brighter, but fortified with not one, not two, but nine essential vitamins and minerals. So, eat up, kids. Oh, and now 33% healthier, up to 12 vitamins and minerals. Hey, we are told to eat the rainbow, but I'm afraid these berries are not going to provide the antioxidant, anti-inflammatory, prebiotic, and cell-protecting effects of polyphenols in actual berries.

## The Case for Whole Foods Over Industrial Products

Compared to whole foods, industrialized foods lack the complex milieu of phytonutrients, one thing that sets whole foods apart from processed foods. Now, those with ties to candy bar companies may argue that ultra-processed foods have essential nutrients, but the essential nutrients are just the tip of the iceberg as it relates to the number and variety of compounds in whole foods. Consider garlic.

Look in nutrient databases, has like manganese, vitamin B6, selenium. However, a clove of garlic contains more than 2,000 distinct components, which are presumably responsible for the cancer protection associated with eating garlic family vegetables, and beneficial cardiometabolic effects when garlic's actually put to the test.

But, when the amount of garlic in the food we eat is less than the amount of MSG, we're probably going to miss out on the benefits. The studies come out exactly as you would expect. flavonoids, for example, a subset of polyphenols found in fruits, vegetables, whole grains, herbs, and tea. That may help explain why these foods may have protective effects against some of our leading killers like cancer and Alzheimer's. And of course, those who eat the most ultra-processed foods get significantly fewer flavonoids in their diet. Might that help explain the association between ultra-processed food and several chronic diseases? Flavonoids are part of the so-called dark matter of nutrition. Ultra-processed foods may be fortified with specific nutrients in a vain attempt to make up for all the nutrition that's been stripped from whole foods, but those few nutrients are just drops in a bucket. If we're tracking only 150 components and there are more than 26,000 different compounds in foods, then that means more than 99% of the compounds stripped from whole foods to make ultra-processed products may be gone for good, and who knows what impact that has on our health. What we do know is that these products are evolutionarily novel. Just like our bodies are not used to all the new stuff added to our foods, our bodies may also not be used to all the old stuff like fiber subtracted from our foods. Just like it's difficult to tease out the long-term consequences of the cocktails of new food additives, we don't know what critical combination of phytonutrients we may be missing.

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