Transcript of “Jeffrey Smith: GMOs & Their Impact on Health - #178”

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Dave: Today's cool fact of the day is …

Dave: Hello, Everyone. It's Dave Asprey with Bulletproof Radio. Today's Cool Fact of the Day is that it's now possible for plants to be engineered with genes that are taken from bacteria, viruses, insects, animals or even humans.

Scientists have worked on some interesting combinations, of course, we're talking genetically modified but cow genes that turned pig skins into cow hides … I have no idea what kind of football you play with that, but it's got to be confusing for the players … Jellyfish genes that light up pig's noses in the dark … I also have no idea what that does to your bacon … and they actually inserted human genes into corn to produce spermicide, which I mean, you could just use coke for that, why would you need to do that to corn. I'm just saying here.

Today's guest on Bulletproof Radio is Jeffrey Smith, the founding director of the Institute for Responsible Technology. I knew Jeffrey personally. He's lectured in 40 countries. He's been in the New York Times, the Washington Post, BBC, the Independent, Daily Telegraph, New Scientist, and every other thing you've probably heard of that's a magazine like Time, as well as on Dr. Oz, MPR, Fox News, Democracy Now. In other words, this guy is the poster child for genetically modified food and what it's doing to our world.

He created in feature length documentary called *Genetic Roulette: The Gamble of Our Lives* and won the 2012 Movie of the Year for it and he's also written and we've talked to him about earlier *Seeds of Deception: Exposing Industry and Government Lies about the Safety of the Genetically Engineered Foods We're Eating*. Wow, that was everything I could think of and then some, Jeffrey, welcome to the show.

Jeffrey Smith: Thank you, Dave.

Dave: I wanted to just jump in. There are some people, I would say a vocal minority, online, who just loved … Every time you say "Well, GMOs present some unsafe potential for humanity and for the genie we can't put back in the bottle." People jump out on Facebook say, "There's no scientific evidence that GMOs are bad."

First of all, what is a GMO, the way you're talking about GMOs and is there some kind of a safe thing like that but just help explain what is Genetic Modification for people who are listening and probably don't know some of the science you do.

Jeffrey Smith: All right, I'm happy to address those that believe that it's completely safe and explain to them why they've had that engineered public relations position but for those who don't understand what GMOs are in the first place, you take a gene from one species as you described and you insert it or forcibly insert it into a DNA of another species.

For example, let's say you want to create a corn plant, engineered to produced its own toxic insecticide, you might take BT, which is Bacillus Thuringiensis bacteria which produces a toxin called BT Toxin. It's known to break open the stomachs of insects to kill them, then you take the gene that produces the toxin out of the bacterium, make millions of copies, put it into a gun, shoot the gun into a plate of millions of corn cells, clone those cells into plants and, viola, now every single cell of every single corn plant that you've just genetically engineered has a gene sized spray bottle producing a toxin that breaks open the stomach of insects to kill them.

Now you've mixed and matched between kingdoms and you've not just inserted the gene but you've also created massive collateral damage in the DNA of the corn plant. Two to 4% of that DNA is different. At the end of that exercise, you have hundreds or thousands of mutations up and down the DNA and in Monsantos most popular pesticide producing BT corn, for example, a normally

silent gene was switched on which produces now an allergen called Gamazene.

There are soy beans which are engineered not to die when sprayed with herbicides that actually now has seven times the amount of a known soy allergen, according to their own study. Again, this is the background noise as a result of this primitive gene insertion technology, so we know right off the bat, no matter what gene you put in, whether it's to produce an insecticide or withstand an herbicide, the process itself creates massive collateral damage, unpredicted side effects and that's because of the primitive state of our understanding and the technology itself.

Dave: That is hard to argue with and it's really interesting because what we're talking about it is unforeseen changes to genetics and one of the things that genetically modified organisms have done is they have changed our soil because we now use so much herbicide on them that we've change the fungus in the soil and the fungus itself is more toxic and I've been really digging in and I've even filmed a documentary about that.

It's amazing what happens when you use these primitive things that cause essentially massive unplanned mutants in corn or soy or whatever it is you're modifying and then because you modified those, now you spray more toxins that themselves cause more mutation in the soil, so we've got one type of mutation stacked on top of another kind of mutation and it's actually scary because this is way, way more than natural selection would ever allow for, right.

Jeffrey Smith: Oh, yeah, it's completely … As George Wald, Nobel Laureate a biology professor from Harvard years ago said "We should not mistake genetic engineering for just natural breeding wherein overnight, we're creating new combinations of proteins that never existed in nature."

In other words, we're by passing the billions of years of evolution and doing it out of the minds of the scientists, God forbid, but it's true

and we're in a situation, just as you said, not only do we have unpredicted side effects in the gene technology but in the application of the technology, like the dousing of herbicides, they originally told us … "They" meaning often Monsanto, the largest GMO producer, "Don't worry, guys, this will reduce the amount of herbicides we're going to use."

Well, they knew it was going to increase. They actually were needing factories, new factories as they were saying it, and lo and behold, in the first 16 years, the herbicide tolerant crops, which is the main reason they genetically engineer, 80% of the crops out there are engineered not to die once sprayed with a weed killer that would normally kill them, it increased the amount of weed killer by 527 million pounds over 16 years.

What happens is the weeds outsmart Monsanto and they become resistant to Round Up and then the farmers spray more Round Up and what happens in the soil is absolutely fascinating and demonic, perhaps. It's just terrible but what happens in the body, I think, is interesting to most people because it turns out we eat a lot of Round Up in our diet and that's not a good thing.

Dave: Last night, I watched *Wolverine*, one of the latest X-Men movies and, of course, I'd be a fan of anyone whose skeleton is indestructible and can heal from anything because I mean, that's literally bulletproof, right, and one of the premises in that whole X-Men thing is that something happened that caused rapid mutation and you see all these crazy cartoon super power things but we've actually done that in our crops.

I mean if you cause 4% of the genes in corn to do random stuff with things from other species, we've identified additional allergens in some corn and some soy but is there other stuff going on where we just don't even have any clue what the effects are?

Jeffrey Smith: Of course, in corn there's higher levels of Lignin as one of this background results, the metabolic path way that produces Lignin

produces rotenone a plant pesticide that's linked to Parkinson's disease so eating genetically modified corn might increase your risk of Parkinson's disease but no one knows since the research has not been done.

When they did genetic engineering on humans, gene therapy, they inserted genetic material which accidentally switched on an oncogene causing leukemia. Same thing could happen in crops but they don't even look in the crops. In human gene therapy, they study it very carefully, they shut down all the therapies when they found out that they had created leukemia in these boys.

With plant genetic engineering, they don't even look to see where the gene ends up and if it happens to be switching on a gene downstream which might cause a toxin, an allergen or a carcinogen or an anti-nutrient. It does increase the amount of anti-nutrients in soy. There's a soy lectin which was practically doubled, according to Monsanto's own research and then suppressed and then discovered.

Yes, I mean, people talk about golden rice. Let's put vitamin A or beta-carotene into the crop. Well, you might increase the vitamin A and at the same time cause dramatic damage because of this side effect issue. Now, in addition, when you change the balance of active ingredients like a vitamin A, you have all sorts of things that can happen. Retinoic Acid is linked to many diseases and that is also part of the metabolic pathway that's linked to the beta-carotene so as David Hubert of the Salk Institute points out, these manipulations of trying to fortify crops can even be more dangerous than the herbicide tolerance in the pesticide production.

Now that's the background noise of GMOs. If we drill down into what's happening, and by the way, the FDA scientists warned repeatedly that genetic technology on food was dangerous. They said it could create allergy in stocks and some new diseases and nutritional problems but guess what, the FDA denied the existence of those concerns even though it was the consensus of their own

scientists which we found out through documents made public from a lawsuit.

They instead in their policy claimed falsely "Oh, the agency's not aware of any information showing that GMOs are significantly different, therefore, no testing is necessary, no labeling is necessary." They ignored their own scientists.

Dave: Jeffrey, it's okay to lie to congress as long as it's for profit.

Jeffrey Smith: Well, yes as …

Dave: This is the US, we need to …

Jeffrey Smith: That's the, In fact, for profit is the word here because the person in charge of that policy at the FDA was Michael Taylor, Monsanto's former attorney, later Monsanto's vice president, now back at the FDA as the US Food Czar, so …

Dave: Wow.

Jeffrey Smith: Yeah, there was a nice nexus there.

Dave: Does he got attorney claim privilege for everything he does because he goes "I'm sorry. I can't say anything, I was their attorney." It's convenient, hm.

Jeffrey Smith: Very convenient. Very convenient.

Dave: I recognize that there is great risk in genetically modifying these organisms, causing mutation, because once they start sharing their pollen which is a known thing, you cannot dispute that at this point, you have cross contamination. You have insect damage and you can't stop it. It seems like this DNA is already out and it's not going to get put back in, so granted we might want to stop doing this but haven't we created a problem that isn't going to go away for many generations?

Jeffrey Smith: Well, many is tactful and wishful thinking. The gene's already released into the gene pool, self-replicate, and will last as long as the gene pool of that species exists … Scientific future where you can put on the goggles and shoot it with a ray gun and figure out how to kill out those specific genes or products. It will outlast the effects of global warming, outlast nuclear waste.

The only thing that lasts longer than self propagating genetic pollution is extinction and this is one of the reasons why we should be in a hurry to delay the deployment of gene technology because if we make a mistake, it lives with all future generations and all living beings, not just humans.

Dave: Are you kidding? Do you know what a branding opportunity this is? If Monsanto could genetically engineer their logo into our food, their logo would self-replicate beyond when humans are even still here …

Jeffrey Smith: I think that's a brilliant .

Dave: That's like a billion.

Jeffrey Smith: They should totally hire you, Dave, for being logo … Their marketing man. I don't think we…

Dave: I have to say something. This is a true story about that.

Jeffrey Smith: All right.

Dave: I sat next to the chief marketing officer from Monsanto at a Neuromarketing Conference. This is a conference at Stanford University about neurology, using EEG machines to measure what people do and I was disturbed that people are trying to convince us that we should do these bad things to the plants on our planet were investigating that. He seemed like actually a nice guy. I mean personally, he wasn't an evil man that I could sense, he just didn't know the harm he was doing.

Jeffrey Smith: Right. I don't think we've scared your listeners enough yet and even though I'm not … I don't intend to scare people or, let's say, raise levels of alarm about health, when you look into the actual period of the studies, it's very serious. Would you like to go on a little journey with me, which I call *Death, Disease, Destruction and Despair* but we're going to come out the other side with actually how to avoid GMOs and actually how to take them out, which is a plan that's actually already well under way?

Dave: As my five year old would say, so the good guys win in the end and maybe there's a unicorn, all right, let's to the story.

Jeffrey Smith: All right, okay, okay. When the American Academy of Environmental Medicine evaluated the animal feeding studies, he peer reviewed public studies on GMOs, they found that the animals that were fed GMOs, compared to the controls, suffered from gastrointestinal problems. They suffered from infertility and reproductive disorders. They suffered from all sorts of immune system reactions, damaged organs, and they named the organs, as well as dysfunctional regulation of cholesterol and insulin and accelerated aging.

Dave: Wow.

Jeffrey Smith: They said based on the traditional scientific criteria, this is not a situation of casual relationships. This is a causal relationship. These pose serious harm every physician should prescribe non-GMO diets to every patient and this is an organization that looks for new diseases and new causes. They were the first to identify Gold Forest Syndrome, food allergies, chemical sensitivity, more than a dozen others, so they were in a good position as the Sherlock Holmes' of cause and effect on the mass population for disease and disorders.

Now there are thousands of physicians prescribing non-GMO diets and I've interviewed hundreds and hundreds of people, sometimes from the stage with hands raised and people telling me the symptoms that got better when they removed GMOs and lo and behold the same categories of symptoms that were afflicting lab

animals, gastrointestinal being primary, immune system soon after, are being described as getting better in the humans that avoid eating GMOs and even the anecdotal evidence is shocking.

Now when humans get rid of GMOs because they're not labeled, they have to do some strategy, buy organic, they switch to whole food, more or less processed foods, and so that introduces potential co-factors to explain the improvements but then on the farm when they take cows and pigs and they substitute GM corn or soy with non-GM soy or corn the same improvements occur as described by the humans as described by the purity and public studies inflicted on by the American Academy.

Now it turns out that those same categories of diseases and disorders are on the rise in the US population, parallel to the increase in GMOs in the food supply as well as Round Up herbicide, which is the primary herbicide used on the crops and if you look at the specific characteristics of GMOs, in particular the two main toxins, Round Up for the herbicide tolerant crops and the BT toxin, they predispose us specifically to these type of diseases and disorders.

Let's take a look at both of them, shall we? The BT toxin and the Round Up to see what could possibly go wrong with eating an insecticide that breaks open the stomach of insects to kill them.

Well, we were told, sworn up and down, don't worry BT toxin is insect specific. We're not insects, we're safe. Well, it was discovered that in fact humans do react to BT toxin. They get allergic or immune system reactions and cells, human cells do end u with little holes and with leakage.

Now we're eating a toxin in corn supply which is because of BT corn, that's where we get the access to the BT toxin could be creating immune system responses as well as poking holes along the digestive tract. That might explain some of the immune responses that we just talked about as well as gastrointestinal but as you know, if you're

poking holes in the one cell thick walls of the intestines, you might be creating leaky gut, permeable gut.

Now what happens with that is this, the undigested food proteins that normally get broken down into little bits, itsy-bitsy pieces, break prematurely into the blood supply. The immune system then attacks it as an invader. Although the immune components, they have iPhones, so they pull out their iPhones and they take a picture of these undigested food proteins and post it on the Facebook for the body.

Dave: This is the iPhone 6 max screen they have, these are really, really strong, okay? Got it.

Jeffrey Smith: Well, actually, they're a bit fuzzy because when the other … They're not that good because the other immune components look at it and there's something called molecular mimicry and says "Wait a minute, that … I can't fully recognize it but it really looks like that," which is the thyroid. "It really looks like that," which is the microvilli of the intestines or "It looks like that," which is the pancreas and that's autoimmune disease.

One of the most tightly correlated physiological effects related to autoimmune disease is leaky gut. In addition, leaky gut is linked to cancer, Alzheimer's, Parkinson's, autism, food allergies, inflammation and other stuff.

Dave: Yes.

Jeffrey Smith: That list is among the things that are on the rise in the US population in parallel to the consumption of GMOs and it gets a little worse with BT toxin. We're going to go on to herbicides in just a minute but I've got to land this blow. The BT toxin was found in the blood of 93% of the pregnant women tested in Canada, where you live and it was found in 80% of the unborn fetuses in the cord blood.

Now with mice that were … Mice blood cells which were exposed to BT toxin, the toxin was cytotoxic, damaging the red blood cells so now we have BT toxin circulating in our blood, possibly because it goes through the holes it created in the cell walls of the intestines and it might cause damage to the red blood cells. If it gets in the fetus, there's no blood brain barrier yet developed so it might end up in the brain so you have hole poking toxins in the brain of the next generation.

Now the BT toxin should wash out pretty quickly from the blood, according to scientists that I've interviewed and it doesn't wash out quickly or for say, if it does wash that quickly there must be some constant regeneration of that toxin if nine out of 10 Canadian women, pregnant women had it in their blood. It wasn't Mexico where they eat corn tortillas every day and most of the corn that we eat in North America, in the US and Canada are high fructose corn syrup, there's no BT toxin left in that processed food.

The authors of the study speculated that the source of BT toxin was probably the milk and meat of animals that are fed the BT corn on a regular basis, that they stored up the toxin and that it was in the food.

Dave: This is one more reason you might want to have grass fed butter in your coffee, instead of corn fed …

Jeffrey Smith: There you go.

Dave: Genetically modified BT toxin industrial butter?

Jeffrey Smith: Yes, we do interrupt this discussion for a commercial for grass fed butter and grass fed dairy but there's more.

Dave: Yes.

Jeffrey Smith: There's another potential explanation that these scientists failed to postulate in their published peer reviewed study. In 2004, they

found, they wanted to see if genes could possibly transfer into the DNA of gut bacteria which was a big concern. The FDA was very concerned about the antibiotic resistant marker gene leaving the GMO crops and becoming antibiotic resistant diseases so they first … The FDA said "Don't worry, genes are destroyed during digestion. There's no chance that they can transfer because they're going to be broken down."

They took seven human volunteers with ileostomy bags. They had ileostomy bags, they're lower intestines removed, not for the study, and although …

Dave: You don't know that.

Jeffrey Smith: As one said "Well, you never know."

Dave: Anything for science, right?

Jeffrey Smith: Exactly, so they gave them soy burger and a soy milk shake from genetically modified soy and were shocked to find how much genetically modified DNA survived passage through the stomach and small intestine and in three of these seven British volunteers where they don't eat a lot of GMOs, this was in 1999 when they did the study and published in 2004, they found that inside the DNA of three of these people, inside the DNA of the gut bacteria was part of the gene they would have inserted into soy beans to make it Round Up ready.

They inserted bacterial genes into soy beans to make them withstand doses of Round Up and now the gut bacteria contained part of those genes and that gut bacteria was not killable with Round Up, suggesting but not proving that once it transferred, it continued to function.

Dave: Wouldn't having Round Up resistant gut bacteria a good thing if you're going to be eating modern crops?

Jeffrey Smith: It could be, because there's a lot of Round Up in our food. It would give a selective advantage to the transformed bacteria which would over colonize but you don't know which of the bacteria are competent to pick up the gene and so you don't know what you're doing to that gut bacteria and also, the Round Up ready … This was a fun question you asked, you didn't know I was going to answer the question …

The Round Up ready protein has properties of a dust mite allergen it shows the World Health Organization's criteria designed to prevent allergic proteins from then being introduced to genetically modified crops so those who are allergic to dust might end up being constantly triggered but getting back to our BT toxin, once the pro-GMO UK government that was funding this gene transfer study discovered the genes actually transferred and survived digestion, they pulled funding of the study, so we never looked at BT toxin.

Now, drum roll, please, or actually, you need the big drums hitting. Okay, what happens if you east corn chips from corn engineered to produce BT toxin and the genes from those corn chips transfers to the DNA of your gut bacteria and converts it into living pesticide trackers, that maybe why 93% of the pregnant women tested in Canada had BT toxin in their blood, because they were producing it in their gut.

Dave: Wow, this seems like something that might have risk and …

Jeffrey Smith: Yeah, that's the point.

Dave: Unforeseen risk, so to the listeners and there are fewer, I'm sure of them, honestly, who should genuinely believe that the motivation for GMOs was drought resistance or increasing vitamin levels, whether that was the initial motivation or not and I would argue not, given that they started building lots of pesticide plants as they started introducing these things, but whatever the motivation was it failed and it is not creating something that will affect us for a long time and it's not something that's likely to kill you right now.

What it'll do is it'll suck the life out of you slowly as your gut slowly poisons yourself, if that risk happens but maybe it's a different risk. Maybe it just kills our bees so we can't pollinate our things. Bottom line is it hasn't been tested, we have no idea, and we can't undo it. From many levels, this seems as big of a disaster as say releasing massive amounts of radiation into our oceans like Fukushima but even that has a half life because it doesn't self replicate and …

Jeffrey Smith: Right.

Dave: The things that we're creating do self-recreate and, frankly, I'm not living in a state of fear about this but I chose to not spend any money or to support any type of genetically modified stuff, except, didn't we genetically modify Aspergillus so we can use it to make things like citric acid and other relatively harmless industrial chemicals and we've been doing that for a long time without harm?

Jeffrey Smith: We genetically engineer the enzymes or the productions for the enzymes for food and we've genetically engineered the Humulin which is insulin derived from human genes, genetically engineered bovine growth hormone, we've used genetic engineering to create substances in factory settings, in laboratory settings and that's a different equation.

Dave: Why? I mean don't those bacteria and those fungi get out?

Jeffrey Smith: Here's the thing. It can and at which case, it is the same equation. Our institute is against the use of GMOs for food and for outdoor release but we're not against the use of say drug manufacturing when it's done in a contained manner because the equation is different. The risk is not to the whole population.

However, L-Tryptophan, a genetically engineered version of L-Tryptophan in the 1980's killed about a 100 Americans causing five to 10,000 to fall sick and become permanently disabled and it was probably, almost certainly the genetic engineering of that L-Tryptophan that caused the contaminants, it caused the deadly

epidemic and there was a cover up which I describe in my book *Seeds of Deception*. They even lied to congress … I mean the FDA even lied to congress to cover that link.

Dave: It was for a profit. It was okay.

Jeffrey Smith: Yeah, well, actually, they got rid of Tryptophan because in part, according to the theory and the internal memo that was released because it was interfering with drug sales. I think Prozac was released right afterwards and didn't have the test scale Tryptophan and they even said, "We need to create an environment where we eliminate the competitors to these drugs."

They had tried to remove L-Tryptophan twice before and when it turned out that this one brand only of L-Tryptophan caused this epidemic, they got rid of all L-Tryptophan claiming that it was all L-Tryptophan that caused the problem, even though it was only showing up for the one particular genetically engineered strain that had caused the issue and the other scientists were looking at it and saying, "Wait a minute, it were genetically for generic, all L-Tryptophan would have caused the problem," but it didn't stop the political decision to get rid of it.

Dave: There's another problem with these genetically modified micro-organisms. A lot of the digestive enzymes that people take today, including vegan ones can come from Aspergillus which is a fungi that is genetically modified. Sometimes it is. Sometimes it isn't but what I've found is that when people take fungal derived digestive enzymes, they don't do nearly as well as when they take ones that are derived from other types of fermentation or better yet from animals because you don't always get a clean result.

You get the other stuff that's manufactured. You've got transmutations going on and in a highly stressed reactor, bio-reactor cell environment, you get drift of the cultures. It's an unknown thing out there but you can be doing all these things for your health but you can be taking basically something that's made from a toxic fungi

and it's supposed to be non-toxic for you but it still has some of the other toxins in it.

I think it's a very complex problem and it's one that people just haven't really thought about because we've given that genetic modification a pass and, I agree with you, the risk-reward is very different there but I'm still concerned that someone gets whatever drug producing strain of bacteria on their shoes and walks out and that enters the sewage system and we can have Prozac producing sewage sludge factories and that could be messy, too, right?

Jeffrey Smith: No, I agree and I think that … When I talk about keeping it in the laboratory, I'm keeping it in a high secure laboratory as if it were dealing with disease, microbes and putting the food supply order against that. Very specifically, we're don't comment on the drugs, even though we know the L-Tryptophan situation. We do believe that they need to increase their respect for what can go wrong and the current respect is so low that it's dangerous, just as in the case you described.

Now, I need to just talk about herbicide, the Round Up, because I know a lot of people listening to this are really into the science and biochemistry on stuff and I'm going to do it in such a way that it's easy to understand for those that don't want to get into the biochemistry but Round Up has been … We've been sold a bunch of goods on Round Up being supposedly safe and non-toxic.

There are scientists who study it in detail and describe it as the most chronically toxic chemical on the planet and it's unique molecule, this Glyphosate active ingredient. It binds with Kadines. It binds with all the trace minerals. Now trace minerals are like the key in the engine that allow metabolic pathways to happen. The Glyphosate interferes with 271 enzymatic pathways, shutting some down altogether.

Now to give you examples of what it does, because it is such a broad spectrum chelater, binding with all of these Kadines, it was originally patented in '64 as a chelater to, as a descaler or chemical cleaner.

The way that it kills plants is interesting. If you put Glyphosate on a plant in sterile soil, you will stunt it. It will not die. If you put it in field soil, it will die. Now why is that?

Glyphosate binds with the important trace minerals and other minerals, causing the plant to become weak and sick. It eliminates the ability of the plant to defend against disease then it kills the beneficial organisms in the soil whose job it is to do two things. One to convert certain nutrients so that they're assimible by the plant, that gets taken out of the equation or some of them and also the beneficial microorganisms that keep the fungus or the fungal pathogens in check.

The Glyphosate also directly promotes and stimulates the growth of soil borne pathogens. It's that increased soil borne pathogens that do the killing of the weak and sick plants, so it becomes a perfect storm. You mentioned that it promotes fungus, yes. It promotes the growth of fungal based pathogens. Throughout the United States, more than 40 plant diseases are on the rise because of the overuse of Glyphosate and you end up creating plants that are very, very weak and sick.

Now the GMOs are also weak and sick because the minerals are chelated and they don't circulate and a lot of metabolic pathways don't function, now you have animals that are fed their primary diet is Round Up ready crops: soy, corn, cotton, canola, sugar beets, alfalfa, they end up eating weak and sick minerally deficient plants.

Then they end up eating residues of Round Up in high concentrations which binds with their trace minerals, making it even worse and we have a huge problem with animal health right now and the veterinarians that know about this, send the organs of deceased animals for testing and they do not have any detectible manganese or low levels of manganese which is one of the primary minerals that are deprived.

Cobalt which is important for vitamin B12 and that deficiency is huge, so you end up with weak and sick animals, weak and sick plants and then we eat the animals and we eat the plants and we eat the residues of the Round Up and then we become weak and sick but it doesn't stop there. Because it is a chelater, it also is an antibiotic. Most of the antibiotics are in fact chelaters and mostly herbicides are chelaters and it kills selectively the beneficial good bacteria, the stuff we pay for, the lactobacillus, the bifidus, etcetera, but not the e. coli, salmonella, botulism, and the negative stuff.

That can create an overgrowth of negative gut bacteria in the gut that dysbiosis can create harsh gases which can damage the walls of the intestines. The walls of the intestines then don't produce enough CCK which tells the pancreas to produce more enzymes. You have the suppression of digestive enzymes.

You have more undigested food proteins that can get through the walls that are created by the BT toxin but the gut bacteria also creates Zonulin which creates gaps in between the cells of the walls in the intestines, the traditional form of leaky gut and so now you have gastrointestinal disorders and Round Up also damages the micro villi and also suppresses digestive enzymes. It's also an endocrine disruptor. It's very, very low levels. It's also linked to birth defects and if you look at …

It also blocks another metabolic pathway, this is really interesting, the shikimate pathway in the gut bacteria which produces L-Tryptophan which is a precursor to serotonin and so if you don't have enough Tryptophan and you don't have enough serotonin, your mood and behavior are affected. You can talk about Tryptophan, Serotonin better than I.

It also regulates insulin. It's also tells the body "I'm full and I don't have to eat anymore," so it can affect, potentially diabetes and obesity and mood behavior and Tryptophan also links to melatonin which is sleep, so you can have sleeplessness, etcetera, and Round Up, just to get through the whole litany before we draw the

conclusion, Round Up also interferes with the P450 Cytochrome pathway which as you know creates the CYP enzymes which as you know are linked to detoxification of the liver and so if you've impaired the CYP enzymes, all the other toxins you're exposed to could become amplified.

If you look at all of those biochemical changes which I just described, here's the summary that just zoned out, okay. Two scientists looked at them and said "These changes are related to … From Glyphosate, from Round Up … Heart disease, cancer, obesity, diabetes, infertility and reproductive disorders, digestive disorders, multiple sclerosis, Alzheimer's, Parkinson's, autism, aggression, depression, anorexia, multiple sclerosis, kidney failure, and gluten sensitivity. I rest my case.

Dave: I mean since it doesn't have any effect on toenail fungus that we know of, it's probably still safe, so we should sell it, right?

Jeffrey Smith: That's what I'm drinking.

Dave: All right, I mean it's …

Jeffrey Smith: Pure Round Up.

Dave: Yeah, and anything for a profit, right. I mean it's disturbing the amount of Round Up that's sprayed with or without genetically modified organisms but when you look at the fact that the existence of GMO has directly allowed the wholesale destruction of our soil biome by this chemical and if it's having secondary effects on people's health, it's scary and it's unprecedented throughout human history.

Given when I know about epigenetics … I did sort of write a book on that … This is something that will affect our grand kids and because we put it in our soil, it'll affect generations, 50 generations from now, assuming they're still here, not some generation on a little space ship somewhere but unless we're going to go down the sci-fi route, we're

going to live with this for a long time and it's not going to be as nice as it could have been.

What can people do now to maybe get things going? I know lots of the world is not quite as gung ho on GMOs as the US is, the problem is when we do it here, it sort of ends up everywhere anyway so it doesn't matter if they like it. They're getting it.

Jeffrey Smith: Right, so we have a website called non-GMOshoppingguide.com. Our main website is responsibletechnology.org which tells people why to avoid GMOs, a lot of details, a lot of interview, public studies are cited in the works there but then how to avoid GMOs is nonGMOshoppingguide.com and we list over 30,000 products that are verified non-GMO by the Non-GMO Project.

We also give the four primary tips. One, buy organic, it's not allowed to intentionally use GMOs although contamination can happen. Two, buy products that say non-GMO on their package. The Non-GMO Project is the best. Three, buy products listed in the shopping guide, and, four, if it doesn't have one of those organic or non-GMO labels, you can avoid the nine genetically modified food crops or their derivatives or the animals that have been eating them.

The nine crops are soy, corn, and just there you end up hitting all the processed foods, not all of them but a lot of them, because they're derivatives like multi-dextrin and dextrose, whatnot, they're listed in that shopping guide. You have cotton seed oil, canola oil, sugar from sugar beets, not the clean sugar and not b-table beets, but sugar beet sugar, alfalfa which is used as hay for animals, and then zucchini, yellow squash, not all of it, some of it and papaya from China or Hawaii.

Mercifully, pop-corn is not yet genetically engineered and doesn't cross pollinate, so those are the nine food crops. You also have Aspartame which comes from genetically modified organisms. Friends don't let friends take Aspartame, just go to Google … Just

Google Aspartame and symptoms and you'll camp out for a few hours and …

Dave: It's on a kryptonite … It's a kryptonite food on the Bulletproof Diet …

Jeffrey Smith: Totally freaking out. I mean it was put on the market because the CEO was Donald Rumsfeld and he had … Truly, it was Donald Rumsfeld, he used all of his political capital in the Reagan administration to get it approved over the objection of the FDA, where in fact he declared GD Searle, violating the law, and fraudulently getting the information to the FDA after allowing, pulling the tumors out of the animals before they did the research.

Those are all listed there and then you have the milk and meat and eggs from animals that are fed GMOs. No, and not a single research study was done, of course, published on those things but there's evidence suggesting that there's problems with that, both anecdotal and logical, scientific, and discovery of DNA, for example in the milk, from the feed.

All that's laid out there, so that's the first thing that people can do is to avoid GMOs and if people haven't yet decided to avoid GMOs, then … Or they want to convince others to avoid GMOs, the tool that we have found to be most effective at convincing people, which lays out these risks that we just talked about and many more is the movie *Genetic Roulette: The Gamble of Our Lives*, available at Genetic Roulette movie.com.

Full disclosure, I'm the director. I gave the rights to the Institute for Responsible Technology and it is in fact … We do pre and post test studies on people, they completely change their diet, often, usually, when they see this movie.

Now that's to avoid GMOs on your own but your question was "What can we do about this?" and that's a bigger question. Now I'm going to answer what I think is the best strategy and I've been in this for a couple of decades, and I've traveled around the world, as mentioned,

40 countries and there's a bunch of those countries and I would say are hugely successful at minimizing GMO exposure in the population and those countries are Europe, the European Union.

How did Europe take out GMOs? It was not the law. It was not the European Commission. It was Unilever on April 27, 1999, Nestle's the next day, and then everyone else the next week or two, they kicked it out because there was a lot of coverage on the health dangers of GMOs in the news and they ended up causing enough consumers to be concerned about eating GMOs that the food companies realized "I can't continue to use GMOs and protect my sales and market share therefore to protect my profit, I'm going to eliminate GMOs," from where? "Europe," not the United States because the coverage was …

Actually, it was a lifting of a gag order of a scientist in February 16th 1999, 10 weeks later, Gazelle wrote over 700 articles written in the UK press alone. Within a month it was a huge scandal, not covered in the US, Project Sensor described it as one of the 10 most under reported events of the year here. Now tipping point, can we have a tipping point in the United States? Yes, we know from bovine growth hormone, kicked out of Walmart, Starbucks, Yoplait, Dannon and most American dairies.

We had a tipping point against GMOs in the natural products industry in 2013. That was helped along by Whole Foods announcing in March of 2013, that when a product becomes third party verified by the Non-GMO Project, it increases sales by 15 to 30%. Thousands of products enrolled in the Non-GMO Project in the next couple of months.

Backlog of the year, so now we have test cases of Grape Nuts and Cheerios and I can't believe it's not Butter and Smart Balance and Ben and Jerry's all declaring Non-GMO in the Walmart space, in the Safeway space, outside the natural products industry because the industry then … That industry's tipped.

Now 40% of Americans say they're avoiding or reducing GMOs so they're sensitive to the situation, not 40% of Americans are actually doing it. They say they're doing it but they're sensitive to the situation and most of them shop in traditional supermarkets so if they're walking down the aisle and they see Grape Nuts, front of the package, full color "Non-GMO Project Verified" and they start to buy that more by even a little percentage and the market share goes up, every other food company realizes, "Uh-oh, this trend is not firewalled behind the walls of Whole Foods. It's now in Walmart. It's in Safeway. It's etcetera. We have to remove GMOs."

To answer an interesting question, in a 1,000 years or a 100 years, they look back at this time and figured what saved the genetic integrity of all living beings and all future generations, because the bio-tech industry is in fact intending to genetically engineer 100% of the food supply and the trees and the insects and the funguses, not making this up.

These are stated goals by insiders, announced on the podium, 1999, three weeks before the gag order was lifted on the scientist, the Monsanto's consultant said, "The goal that they created was 100% all commercial seed genetically engineered within 15 to 20 years," and another company estimated it'll only take five years to do 95% of the commercial seeds and that entire fast track replacement of nature was derailed three weeks later when a gag order was lifted on a scientist and it was covered in the press.

We have a plan to create a tipping point. We actually have moved the needle from 15% of Americans saying they're avoiding or reducing GMOs in 2007 to 40% now by focusing now on the Walmart shopper but not the generic one that hasn't yet related food to health but the mom, the pet owner, the sick person, the healthcare professional, and the religious person that thinks GMO means God Move Over.

These are the five demographic groups and so we have a five year plan to eliminate GMOs from food and then animal feed and we're

now raising money for that so for those that would like to support in this endeavor to save all living beings and all future generations, not a bad resume builder, I would suggest going to responsibletechnology.org and making a very profound donation that's regular so we can get …

We know exactly what to say, who to say it to, how to say it, we just need production costs and staff time covered to finish this accelerating and Non-GMO Movement that we've helped create, so that's my answer to your question.

Dave: If you've been fortunate in your life and you're in a position to make a small donation to support Jeffrey's mission here, it's in your best interests if you have family, especially little ones, it's doubly in your interest. If you are in a position to be able to listen to a podcast and you're driving to work, this is probably the sort of thing that's worth paying attention to.

Jeff, what's the URL people should go to if they'd like to support your work to directly pull this stuff out of our food.

Jeffrey Smith: Thank you, responsibletechnology.org. It's the Institute for Responsible Technology, responsibletechnology.org. You can also sign up for a newsletter there. We'll keep you informed about what's going on, let you know of new struggles and things.

A potato was just approved, developed by JR Simplot, rejected to the next week by McDonald's. We don't know if Burger King's going to pick it up but we'd like to be able to get his signature on a petition to information them that you're not going to be eating their French fries again … Well, you probably don't eat their French fries anyway but you know what I mean.

We have opportunities for people to participate in activism to get alert. We have a speaker training program. We've taught 12,000 people how to speak about GMOs. It's an eight hour, seven hour online course. We have scripted PowerPoints. We have also a tipping

point network of close to 10,000 activists and over a 100 groups in North America.

We have lots of online resources, videos, etcetera and so we are doing the work of creating behavior change messaging so that people want to avoid eating GMOs so that the dynamics in the market place change so that we don't have to try and win it in Washington where Monsanto rules supreme and we don't have to try and win it in state labeling bills which can be immediately, at any time, pre-empted by the FDA which they did with manual labeling in the past and then did nothing.

We're doing it where we have our strength, where we have stability. Politics is not so stable. I was flown to Poland by the Polish government to give a press conference with their minister of environment on their non-GMO policy and the next week the government was voted out of office and similar's happened in other countries where I work, where a week later after a successful campaign, it was a new government.

We're not asking the Obama administrations for a handout. We're doing it ourselves by educating people about the dangers, telling them how to avoid GMOs, putting economic pressure in the market place where companies who are paying attention are going to make changes and already have.

Dave: Responsibletechnology.org is where you go to support all of that work. Now, Jeff, there's one more question, one that I've asked every guest on the show and one you can riff on because you've talked about this sort of thing before but top three most important things people can do if they want to perform better and I'm just guessing that avoiding Round Up and GMOs is on your list so I clarified that …

Jeffrey Smith: Well, I'm going to expand what we've talked about and that Round Up is now being used as a ripening agent on many types of crops, wheat, barley, lentils, rice, potatoes, sweet potatoes, citrus, and because of that it's sprayed right before harvest and then it

accumulates in the food portion as the other part of the plant dies and we eat it. The EPA last summer increased the allowable levels of Round Up residues on a 160 varieties of crops to levels that are as much as a million times higher than that which is associated with multiplying breast cancer cells and human cells.

I would say buying organic is now a higher priority than it used to be, so it's not just avoiding GMOs but switching to organic is pretty critical and then I've heard from a lot of people when they actually can eat food that looks like food that's not packaged and whatnot. They get better from a variety of things as part of their regime of changing their diet, so organic, reduce processed foods, those two are for the …

I know that your listeners are really committed to health and will do things that others won't do so I'm going for the heavy stuff, real lifestyle change, not just avoiding GMOs, organic and trying to get cooked foods cooked from scratch as much as possible and I would say water is important because a lot of the water is … From my expertise as GMOs and Round Up but unfortunately it's in the water supply, too.

There was a study done over two year with rats where they were fed Round Up in the water at levels considered way safe in the US like a fraction of what's allowed in the US water supply and the rats compared with the controls had multiple massive tumors, early death, and organ damage, so purified water, it will clean up that Glyphosate or Round Up out of there.

I know I'm being, I'm just sticking to the … To what I know.

Dave: Well, there's one other thing, I mean, because I know you personally. You meditate more than the average person. I'm really surprised meditation was not on your list.

Jeffrey Smith: Yeah, actually, I do meditate. I practice transcendental meditation and I love it. I've been doing it since 1975 and people say to me "I

don't know how you do it by traveling so much." I travelled eight months last year and probably more this year and I say I don't know but actually I do know how I do it. I think I take a vacation twice a day with meditation and there's a lot of research in there but I don't …

It's interesting, the biotech industry, one of the reasons why I'm not in the habit of talking about meditation is the biotech industry spent hundreds of thousands of dollars looking into my past, trying to get everything they could to find a skeleton in my closet to attack me, which is what they do. I mean we expose how they do this with others and they couldn't find anything negative.

They found out that I like to dance and I meditate so they tried to use them against me. "He's not a scientist. He's a dancer and a meditator and a fake," so I just keep that …

Dave: You're joined by a very large number of very successful executives who are, have outed of themselves as meditators.

Jeffrey Smith: I know.

Dave: Which is essentially a high performance behavior so I don't think you have to worry about that at all, anymore, because if they want to attack you for it, all they're saying is that they are not conscious and actually that would be accurate. I don't think that that's something that anyone sane could hold against you.

Jeffrey Smith: That's true and I don't put those fellows in the category of sanity who'd try to use it against me. Yeah, thank you. I did absolutely keep my personal life completely out of my public life for years until they did their big expose. "Do you, you know, he's a meditator. He's a dance …" and it's like "All right, maybe I should dance in public again."

All right, there you go.

Dave: Thank you so much for being on the show, Jeffrey. Responsibletechnology.org is the place to go to support the work to make our food supply safer.

Jeffrey Smith: Thank you, Dave. You know, Dave, I am amazed. I've talked to you about so many things and you are totally geekified in that you follow things down to real technical levels and I wasn't expecting you to know as much as you did, when you just expressed about Glyphosate and its fungal pathogens and Aspergillus and all that stuff because you were just such …

Dave: I read your book, remember?

Jeffrey Smith: Yeah, that's true but you remember and it was also, you brought other stuff and then I … That it's not in the book, it was … I wrote about since then.

Dave: Thank you so much and if you're listening to this, in addition to supporting responsibletechnology.org, I have no affiliation other than that I'm friends with Jeffrey and appreciate and admire his work. The *Bulletproof Diet Book* is coming out right about now, so if you would do me the favor of saying thanks for all these 150 podcasts by checking out the *Bulletproof Diet Book* on Amazon, you can send your receipt using instructions at orderbulletproofdietbook.com and I'll send you a bunch of free bonuses for it.

Please work to continue the kind of work that you're listening to right now and hearing about real hard science from guys like Jeffrey by supporting the podcast by buying the book and leaving a kind review. I really appreciate it and don't forget responsibletechnology.org because Jeffrey is a rock star. Thanks, Jeffrey.

Jeffrey Smith: Thank you, Dave.

Dave: Did you know that Cyber Monday didn't even exist before 2005 and now it's the ultimate online shopping day of the year, even bigger than Black Friday? It's true. In fact, last year's Cyber Monday was the

biggest online shopping and savings day ever and now this December 1st, I'm upgrading Cyber Monday to help you hack your holiday shopping list by kicking off a special online event with exclusive savings.

The savings continue on December 2nd, when in celebration of the Bulletproof Diet Book launch, we're kicking off a 12 days of Bulletproof. That means you'll get great 24 hour savings on a different product in the Bulletproof Online Store every single day from December 2nd through December 13th and in the spirit of giving, you can even save 25% more on top of the daily discounts and cross up to 12 names off your gift list all at once by giving the entire bundle of products with just one click of your mouse.

If you haven't already, just make sure you sign up for email updates at Bulletproof.com or like Bulletproof on Facebook to make sure you get all the details, then just mark your calendar to watch your email inbox and the Facebook page starting December 2nd for your invitations to each of the 12 days of Bulletproof.

Thanks for listening and I'm excited to help you give the gift of Bulletproof this Holiday Season.

Featured

Jeffrey Smith
Seeds of Deception: Exposing Industry and Government Lies About the Safety of the Genetically Engineered Foods You're Eating (Paperback)
Genetic Roulette: The Documented Health Risks of Genetically Engineered Food (Hardcover)
Genetic Roulette: The Gamble of Our Lives (Documentary)
Non-GMO Shopping Guide
Institute for Responsible Technology (IRT)
Twitter – @IRTnoGMOs
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Resources

How does Bacillus thuringiensis (Bt) toxin work?
Human Gene Therapy
Do dietary lectins cause disease? (British Medical Journal)
Monsanto
In a Grain of Golden Rice, A World of Controversy Over GMO Foods (NPR)
Retinoic Acid
Beta-carotene
Dave Shubert, Salk Institute for Biological Studies
GMO Researchers Attacked, Evidence Denied, and a Population at Risk (Sign of the Times)
Michael Taylor, Deputy Commissioner for Foods and Veterinary Medicine
U.S. Farmers Report Widespread GM Cross Contamination
American Academy of Environmental Medicine
Roundup (Glyphosate)
Leaky gut syndrome
Molecular mimicry as a mechanism of autoimmune disease (Clinical Reviews in Allergies & Immunology)
Honeybees on the Verge of Extinction (Huff Post)
Fukushima Daiichi nuclear disaster
Aspergillus
Humulin
Recombinant Bovine Growth Hormone (rBGH)
L-tryptophan
Chelation
The Causes of Intestinal Dysbiosis: A Review (Alternative Medicine Review)
Zonulin and its regulation of intestinal barrier function: the biological door to inflammation, autoimmunity, and cancer (Physiology Reviews)
Endocrine disruptors
Shikimate Pathway
Serotonin – the Happiness Hormone

Melatonin – the Sleep Hormone
CYP gene family
Transcendental meditation

Bulletproof

The Bulletproof Diet Book
The Better Baby Book